

RADIO AMATEUR

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THE WIA RADIO AMATEUR'S JOURNAL

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EXECUTIVE EDITOR

Bill Rice VK3ABP

MANAGING EDITOR

Graham Thornton VK3IY

SENIOR TECHNICAL EDITOR

Peter Gibson VK3AZL

Technical Editors

David Brownsey VK4AFA
Don Graham VK6HK
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DRAFTING

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MARKETING

Bruce Kendall VK3WL
Norm Eyres VK3ZEP

ADVERTISING

Brenda Edmonds VK3KT
June Fox

BUSINESS MANAGER

Bill Roper VK3ARZ

All contributions and correspondence concerning the content of *Amateur Radio* should be forwarded to:

The Editor
Amateur Radio
PO Box 300
Caulfield South
Vic 3162

REGISTERED OFFICE

3/105 Hawthorn Road
Caulfield North Vic 3161
Telephone: (03) 528 5962
Fax: (03) 523 8191

Business hours: 9.30am to 3pm
weekdays

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Cover

Our theme this month is "Women in Amateur Radio" to coincide with the ALARA Contest. Pictured L to R are Denise VK5YL seated at the rig with Meg VK5AOV (Secretary and VK5/8 State Rep) and Christine VK5CTY (Senior Vice-President and Minutes Secretary). For further information about the event depicted, see the box in ALARA notes on page 38. See also "Women in Radio" on page 24 and "If You Can't Beat 'em, Join 'em" on page 26.

EDITOR'S COMMENT

BILL RICE VK3ABP EXECUTIVE EDITOR

Free Speech?

Some months ago, one of our regular columnists proposed an alteration to the amateur regulations, and sought comment from readers as to what they thought of it. A Division of the WIA then wrote to Executive enquiring what freedom did we give our columnists to express views not in accordance with current WIA policy? This editorial is an attempt to answer that question, and also the larger one of how far, in these pages, may people go in expressing their personal opinions.

A reasonable answer to the question might be that anything is permissible providing it does not offend anyone. Unfortunately, if I have learned anything from my seven-year occupancy of the

editorial chair, it is that almost anything will offend someone! To give an example. Just before I found myself to be the chosen one for editor, the front-cover picture selected for AR showed a church spire with a folded dipole antenna attached to it. It was a transmitting antenna for a community FM station run by a group, of which the church was one member. It fell to me, a few weeks later, to reply to a reader who considered the picture was sacrilegious, and that we should not have used it. It seemed to me that if the members of that church were not offended by the antenna, who were we to object to it?

Since then, from time to time, the odd claim or comment finds its way into our pages, usually after a considered judgment by several

people that it's "fair enough", and then "bingo", someone takes violent umbrage at it; sometimes for reasons which simply never occurred to us! But, for every time this happens, I would guess half a dozen potential problems are circumvented by editorial alteration. So far I would hope we've managed to avoid several international incidents and numerous libel suits! But it is not our editorial policy to suppress any opinions, even those strongly at variance with WIA policies, or our own thoughts on the subject. The past year or two of letters in "Over to You" should prove that point!

So, talking now specifically to columnists and letter-writers, don't be surprised if your material appears in print with slight changes here and there. Sometimes they might only be matters of spelling or grammar, but sometimes they are to avoid giving offence somewhere. Nevertheless, we dis-

claim all responsibility for opinions you may express, in the event that someone does get really upset. It's your opinion, not ours! Even this editorial is my personal responsibility, not that of the WIA.

To conclude, contributors, don't be too discouraged. If no one ever expressed a dissenting opinion, life would be rather dull! We want to hear your opinions. And, if your statements can be shown to be undeniably true, you have nothing to fear. As the proverb says, "You can't make an omelette without cracking eggshells". Just let's be sure the omelette's fit to eat!

Errata

On page 48 of the October issue, the Mobile 6m record holder should be VK4ZAZ, not VK2. The date should also be 06/04/91. Apologies to all concerned.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society — Founded 1910

Representing the Australian Amateur Radio Service — Member of the International Amateur Radio Union

Registered Executive Office of the WIA: 3/105 Hawthorn Road, Caulfield North, Vic 3161

All mail to: PO Box 300, Caulfield South, Vic 3162. Telephone: (03) 528 5962, (03) 523 8191

Fax: (03) 523 8191 (non-dedicated line)

Business Hours: 9.30am to 3.00pm on weekdays

General Manager and Secretary: Bil Roper VK3ARZ

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WIA NEWS

FROM THE WIA EXECUTIVE OFFICE

1992 Call Book

The 1992 Australian Radio Amateur Call book is now available from Divisional book shops. This latest edition of the Call Book has overcome some of the problems of the previous one, and should be a valuable addition to your shack.

As well as the traditional call sign information, it contains the usual reference material - band plans, records, repeaters, beacons and DXCC list.

Careful attention to all stages of the production has enabled the cost to be maintained at the same cover price

as last year.

Amateur Radio Address Labels

Observant members will note a further change to the information on their Amateur Radio magazine address labels as from the October 1991 issue. Negotiations with Australia Post on bulk post rates disclosed that the addition of their distribution centre code on the address label would result in significant savings to the WIA.

As the label already held as much information as could be fitted in, it was found neces-

sary to replace the membership computer number with the Postal Centre number - a sort of postcode for APO Mail Centres.

You will find this number in the top right hand corner of the label. For explanation of the rest of the label, see the WIANews items in Amateur Radio of March 1990 and August 1991.

Amateur Radio Promotional Video

Allan Doble VK3AMD has recently notified us of the completion of a promotional text-only videotape for use at Hamfests, displays etc.

The tape runs for almost 3 minutes, scrolling through a list of services available to WIA members in easy-to-read

script over a background of the WIA winged emblem. It ends with details of the Divisional address and weekly broadcast, and could easily be adapted to suit other Divisions.

Further information can be obtained from the Federal Videotape Co-ordinator John Ingham VK5KG or from Allan direct.

DoTC Guidelines For Pager Services

Recently the WIA was asked to comment, at fairly short notice, on a DoTC Spectrum Planning Document containing guidelines on the assignment of frequencies to the pager services.

A report was prepared by Rob Milliken VK1KRM and

WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers	Weekly News Broadcasts	1991 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Christopher Davis VK1DO Secretary Jan Burrell VK1BR Treasurer Ken Ray VK1KEN	3.570MHz 2m ch 6650 Rebroadcast Mondays 8pm 70cm ch 8525 2000 hrs Sun	(F) \$67.50 (G) (S) \$54.00 (X) \$40.50
VK2	NSW Division 109 Wigram St Parramatta NSW (PO B ox 1066) Parramatta 2124 Phone (02) 689 2417 Fax (02) 633 1525	President Roger Hanley VK2ZIG Secretary Bob Lloyd-Jones VK2YEL Treasurer Bob Taylor VK2AOE (Office hours Mon-Fri 1100-1400 Wed 1900-2100)	From VK2WI at 1045 and 1915 on Sunday on the following frequencies and modes: (1045 only): 1.845 AM; 3.595 AM morning and SSB evening; 7.146 AM; 10.125 SSB; On relay 14.160 SSB and 21.170 SSB; 28.320 SSB; 52.120 SSB; 52.525 FM; 144.120 SSB; 147.000 FM; 438.525 FM; On relay 584.750 ATV sound; 1281.750 FM Plus automatic relays to 2m repeaters surrounding Sydney and manuals to several county repeaters. News headlines by phone (02) 552 5188	(F) \$65.00 (G) (S) \$52.00 (X) \$38.00
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton VK3PC Secretary Barry Wilton VK3XV Treasurer Rob Hailey VK3XLZ Office hours 0630-1530 Tue & Thur	1.840MHz AM, 3.615 SSB, 7.065 SSB, 147.250 FM(R) Mt Macedon, 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Mildura 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	(F) \$69.00 (G) (S) \$55.00 (X) \$42.00
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President John Aarsse VK4QA Secretary John Lees VK4ER Treasurer Eric Fittock VK4NEF	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400, MHz 52.525 regional 2m repeaters and 1296, 100 0900 hrs Sunday Repeated on 3.605 & 147.150MHz, 1930 Monday	(F) \$67.50 (G) (S) \$54.00 (X) \$40.50
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Rowland Bruce VK5OU Secretary John McKellar VK5BUM Treasurer Bill Wardrop VK5AWM	1820kHz 3.550MHz, 7.095, 14.175, 28.470, 53.100, 145.000, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.00 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555M 146.500, 0900 hrs Sunday	(F) \$67.50 (G) (S) \$54.00 (X) \$40.50
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 388 3888	President Cliff Bastin VK6LZ Secretary John Farnham VK6AFA Treasurer Bruce Hedland-VK6OO Thomas	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525MHz County relays 3582, 147.350(R) Busserton 146.900(R) Mt William (Sunbury) 147.225(R) Mt 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker Broadcast repeated on 3.560 at 1930 hrs	(F) \$59.00 (G) (S) \$37.50
VK7	Tasmanian Division 148 Denwent Ave Lindisfarne Tas 7015	President Tom Allen VK7AL Secretary Ted Beard VK7EB Treasurer Peter King VK7ZPK	146.700MHz FM (VK7RFH) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNN), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$65.00 (G) (S) \$52.00 (X) \$38.00
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28MHz).			

Note: All times are local. All frequencies MHz.

Membership Grades

Full (F) Pension (G)
Needy (G) Student (S)
Non receipt of AR (X)

Three-year membership available to (F) (G) (X) grades at fee x 3 times

Paul Bell VK1BX, two amateurs technically qualified and active in the field who have assisted the WIA in the past with similar issues.

Their report states that the working standard produced by DoTC is excellent and, if not relaxed later, should be unreservedly accepted by the WIA. However, it suggested that one new paragraph should be incorporated as follows:

Where the side band noise remains a problem to the receiver of another service, the paging service be required to install a notch filter on the receivers frequency with all costs to be borne by the receiver. That notch filter to have an insertion loss not greater than 0.3dB.

This filter on the pager would assist compatibility with the amateur service. As the pager is already meeting specification, it is expected that the amateur repeater owner should bear the cost of the filter. Incidentally, placing a filter at the amateur receiver is not possible, as the frequency involved is the amateur receive frequency.

This recommendation has been conveyed to DoTC.

Another feature of the new guidelines is that they allow for a doubling of pager EIRP but, as this is only a 3dB increase of the carrier, it was not considered a major concern.

In their report to the WIA, Rob and Paul suggested the following guidelines for amateur radio band planners for the 144-148MHz band:-

- If possible all new top end (147-148MHz) allocations be made so that the repeater transmit frequency is higher than its receive frequency in order to distance the repeater receive frequency from pagers just above the top edge of the band.
- Where problems arise with existing services, reverse the repeater input and output frequencies, or use the notch filter, whichever is better and most cost effective.
- Where reversal of repeater

input and output frequencies is cost effective but clashes with other services, including co-channel amateur repeaters, invert both in order to avoid the possibility of repeater "sing around".

These suggestions will assist the WIA Federal Technical Advisory Committee (FTAC) in defining WIA guidelines for overcoming pager interference to 2m repeaters.

Rob and Paul have also stated that, in their opinion, the amateur service will have to increase its technical standards for equipment co-sited with pagers. For example, the notch filter identified earlier will need to be a commercially built item as it will be associated with commercial pager transmitters.

These sentiments may be unpopular with some amateurs but, as pagers are a very real problem, they may be the only way we can continue to co-exist.

"Code-free Novice" Licence

Throughout its history the WIA has been actively concerned with reviewing the licence conditions and privileges of the Amateur Service. Submissions from the WIA have gained Australian radio amateurs the Limited licence, the Novice licence and, more recently, VHF privileges for Novices.

These submissions were developed as a result of extensive discussion at Divisional and Executive level to establish an overall WIA policy, generally as a result of voting at a Federal Convention.

At the 1988 WIA Federal Convention, when the report of the "Future of Amateur Radio Working Party" was adopted, it was unanimously agreed that the WIA policy should include a rationalisation of licence entry level and band/power privileges. In effect, it proposed that the technical proficiency, as demonstrated through the Theory examination, should determine the mode and output power permitted, while the

Morse code proficiency should set the frequency bands.

This is most easily explained using the matrix approach which has been published previously. It is reproduced here in Figure 1 for the benefit of members not familiar with it.

The logical next step in the policy is the formulation of another grade of licence, as shown in the matrix in Figure 2.

It is worth noting that a number of other national amateur radio societies, including the USA, Great Britain and Japan, have obtained VHF Novice style licences for their amateurs.

Discussions with David Hunt, Manager Licensing at DoTC in Canberra, at the time of adoption of this WIA policy in 1988, and again in 1989 after VHF privileges for Nov-

ices were granted, disclosed that DoTC would be prepared to consider a submission for a "code-free" Novice licence.

The proposal has now had plenty of time for consideration by members, and has recently again been circulated to Divisions.

Consequently, the WIA submitted an application to David Hunt during September 1991 for a class of licence to which entry requirements will be Novice level Theory and Regulations only. Privileges requested will be the same as for existing Novices on VHF - FM only, 146 - 148 MHz, 10 Watts.

What will the new grade of licence be called? "Limited Novice", "VHF Novice", or perhaps something quite different?

Members will be kept informed of progress.

Fig 1

EXAMINATION MODEL

THEORY		BASIC	FULL
MORSE	Nil	VHF Novice	VHF Intermediate
	Slow	Novice	Intermediate
	Fast		Unrestricted
REGULATIONS		One Test	

Fig 2

LICENCE MODEL

GRADE	TECHNICAL	BANDS
VHF Novice	CW/SSB/AM/FM Low Power	Novice VHF/UHF
Novice	CW/SSB/AM/FM Low Power	Novice HF/VHF/UHF
VHF Intermediate	All Modes High Power	All VHF/UHF
Intermediate	All Modes High Power	Novice HF All VHF/UHF
Unrestricted	All Modes High Power	All VHF/UHF All HF

Deregulation of the

Amateur Service

At the 1991 Federal Convention the WIA was invited by David Hunt from DoTC to consider further possible steps towards deregulation of the Amateur Service, with particular reference to repeaters and packet stations.

A small committee has been hard at work on this important and complex subject since then and was due to report back at the October quarterly meeting of Executive and the Federal Council.

Much of the input received has come from Kevin Olds VK1OK, and the Chairman of FTAC, John Martin VK3ZJC who, with valuable assistance from the West Australian Repeater Group Inc, John Robinson VK2XY, and others, has provided a detailed reworking of many sections of the regulations relating to repeater, packet and RTTY transmissions.

1991 Ron Wilkinson Award

The WIA has several ways of recognising service by its members or other radio amateurs. One of these is the Ron Wilkinson Award, which was instituted in 1977 through the generosity of Mrs Mary Wilkinson in memory of her husband, the late Ron Wilkinson, VK3AKC.

This Award is made annually in March, nominally on the 3rd of the month, to acknowledge special achievement in any facet of amateur radio. Technical or administrative expertise, community service or any similar field may be considered.

The Award comprises a certificate and a cash prize, including a year's membership of the WIA. We mention this Award at this time because nominations for it for 1991 must reach the Executive Office by 30th November 1991. Although preference is given to WIA members, non-members are eligible also.

So, if you know of someone who has made a significant contribution to amateur radio in the last year, or over an extended period, please feel free to pass on the name or names to your Divisional Federal Councillor in good time for it to be considered by the Division and forwarded to Executive by 30 November.

Three Year WIA Membership

At the end of November well over half of the WIA members will receive notices advising that their annual membership renewal is due on 1st January 1992. How many members have considered the money saving advantages of renewing for a three-year membership?

A three year membership of the WIA allows you to pay for the next three years for just the cost of three times this year's subscription, thus avoiding the seemingly inevitable cost increases in subscriptions that will be made in the two following years.

Incidentally, for those hundreds of WIA members who have already availed themselves of this facility, do not become concerned if you do not receive a membership renewal notice at the end of November. Simply check the top line of the address label from a recent copy of Amateur Radio magazine to see if your renewal is really due this year before you send us any money. We hate having to return your money, but must do so if there is still another year or two of your membership to run.

Whoops!!

In the WIANEWS column in the October 1991 issue of Amateur Radio magazine, under the heading "Buyer Beware", a comment appeared on the likelihood of overseas "bargains" not being appropriate to the Australian scene and referred to the possible need for expensive modifications. Unfortunately, the published item also suggested that such modifications may

be illegal.

Obviously that is not correct. As it stands in Australia, any illegality can only concern the use of the equipment, not the modifications. Very few amateurs have not made some modifications to their gear.

The paragraph in question was condensed from a news item received in the office, which also referred to the modification of amateur equipment for use on non-amateur frequencies, and the use of the modified equipment on those non-amateur frequencies. Unfortunately, in the editing for publication, the words "and possible illegal" were inadvertently left in, so putting a completely incorrect connotation on the remaining statement. Our apologies if the error has caused any confusion.

EMC Symposium

The IARU Region 3 News bulletin announces that the 11th International Symposium on Electro Magnetic Compatibility is to be held from 2nd to 4th September 1992, in Wroclaw, Poland, and has called for original, unpublished papers. After the Seminar, a meeting of the International Special Committee on Radio Interference (CISPR) will be held at the same location.

Amateur Exams

The delegation of administration of radio amateur qualification examinations by the DoTC to the WIA has caused a ripple throughout the amateur service in Australia. Quite a lot of comment has appeared, in various forms, in the public arena over the past three months. However, although much of that comment was questioning and constructively critical, some of it was uninformed, emotive, and complete nonsense.

Ever since the "bombshell" discussions with the DoTC in June this year, and up until the start of the new WIA Exam Service system on 1st October

1991, I (VK3ARZ) worked seven days a week to try to put together the best possible examination system for the amateur service in Australia. One that best met the needs of examiners, candidates and the DoTC. I did not have the time to respond to the "nonsense" publicly. However, during that time many concerned amateurs and examiners contacted me and asked questions. Naturally, they were not all completely happy with all the answers, but without fail they all provided input that was invaluable in putting together the final system. Those people at least tried to find out what was happening before making judgements.

Looking back now at some of the comment and misinformation that appeared over the past three months, it is interesting to note that the apparent authors of the most critical, passionate and misinformed material made no effort to contact the WIA Exam Service to find out what was happening before they publicly expressed their views. Subsequently, however, a couple of the authors of the public "nonsense" telephoned me and, after finding out the facts, apologised for "sounding off" in public before they knew what they were talking about!

Now that the new system is up and running, let me provide a few blunt comments and answers.

Why was the system changed? Particularly when many clubs and individuals who were conducting examinations under the "devolved" system were doing a great job, and could have continued to do a great job under that system.

Put simply, the answer is that the resources of the DoTC were unable to keep up with the administrative workload, and the increasing number of very poorly presented examination papers submitted for approval. That was the first major problem.

The second major problem was the "forts". As is so often the case, a handful of people

"stuffed it up" for the majority. Cheating, wide-spread publication of the far too small question banks. etc.. Sadly, having the technical ability to prepare an acceptable examination paper did not necessarily mean that some people had the integrity or intent to conduct examinations properly.

I have read and heard the comment that the WIA forced the DoTC to hand over the examinations. What rubbish! It has been WIA policy for years that the DoTC should run amateur examinations. The WIA as the sole examining body was a distant third in the options published in the 1987 WIA Examinations Devolvement Package. (Option 2 was that DoTC set the examinations, and that others invigilate the exams.)

Quite frankly, the WIA needs examinations like it needs a hole in the head. But what else could the WIA do? DoTC wanted to bail out. Who else could it be? The WIA is the only amateur radio body in this country with the resources, and the belief in the future of amateur radio, to do it!

Another area where a lot of ill-informed comment and criticism has been aired is in regard to the cost of examinations from WIA Exam Service. Some have accused the WIA of "ripping off" the amateur service; still others have stated their earnest belief that the WIA will devalue the exams by setting fees that are too low! Here are some facts.

As WIA Exam Service examinations will be provided to examiners and candidates without favour, whether they are members of the WIA or not, it is important that the cost of providing the examination service is not subsidised by WIA membership fees. Equally, it is important that examination fees should not be subsidising the WIA. Hence, WIA Exam Service has been carefully set up on a non-profit commercial basis.

Strictly speaking, from a cost accounting point of view, even though the total cost of

\$30.00 for a suite of four exam subjects is valid, the split-up of fees of \$10.00 for a theory exam, \$5.00 for regulations, \$10.00 for Morse receiving, and \$5.00 for Morse sending, does not hold water. However, to minimise as much as possible the confusion associated with this change in examinations, it was decided to stay with those long time "standard" basic fees for the time being.

Setting up for the new examination system has cost the WIA just over \$14,000. It will take three years to recoup that amount.

Another concern expressed by some examiners under the DoTC system is that they are not being automatically accepted as examiners under the new system. The fact that WIA Exam Service requires nomination from a recognised radio club, or two acceptable character references, is not a reflection on any individual. Because of the few who "rorted" the old system, it is necessary for every applicant to be an accredited examiner under the new system to have his application supported in this manner.

The work in putting together an examination system which satisfied everybody was unbelievable. Information was sought and received from examiners and amateurs, both WIA members and non-members, located all over Australia. Many of these people were not only experienced amateur examiners, but also were professional educators. The one thing they all had in common was that they held totally different views on almost every aspect of the administration and conduct of amateur examinations! It was a real challenge to come up with a system which met the needs and opinions of the majority.

Now, a word of warning! This new system of examinations is only as good as the people running it. No system is perfect or foolproof. Even though many new aspects of this new system have reduced the ability to "rort" the sys-

tem, nevertheless dishonest examiners may still be able to do it. If cheating by accredited examiners is proven, be advised that not only will the examiners lose accreditation, but DoTC have advised they will withdraw all qualification credits for all candidates who have sat any exams run by the guilty parties.

If you have any further queries about the new amateur examination system, get your information from one of the new accredited examiners, or from WIA Exam Service in Melbourne.

More on Exams

Applications for accreditation as an examiner with WIA Exam Service have been coming in steadily since the Executive Office began accepting applications. In the first 10 days alone, over 70 examiners were accredited. One encouraging aspect of the applications received to date is that most of them have come through amateur radio clubs or societies, with the clubs often nominating 3 or more persons.

The new examination system sees the examiners taking a rather more high-profile role in the amateur community, as their names will be on the lists supplied by both the WIA and the DoTC to people seeking information about all aspects of amateur radio, not only examinations. The WIA also intends to publish updated lists of accredited examiners at regular intervals in Amateur Radio magazine, and will supply the lists to DoTC. So, in many cases, the WIA Exam Service accredited examiner will be the first point of contact with the hobby for the newcomer.

Of course there will always be candidates who are a long way from another amateur, let alone an accredited examiner. WIA Exam Service is able to assist these people by providing arrangements whereby non-amateurs in their locality may be able to supervise examinations for them.

Still More on Exams - What Candidates Should Know

The WIA has made considerable efforts to ensure that all likely examiners have been informed of the protocol for the WIA Exam Service, but has not directed much information towards the candidates. There is much that potential radio amateurs should know as they approach the exams.

Many candidates will not read these words of advice, as many do not join the WIA until after receiving a licence. Hence we ask all members who are in touch with non-member candidates to bring this information to their attention.

An examination candidate can expect to acquire information about amateur radio in general from any accredited examiner. If the initial contact is through the WIA, or through DoTC, a candidate will be provided with a listing of all examiners in their state. Once a formal examination application has been made, the examiners should inform the candidate of the date, time and location of the next examination. They should also advise the candidate of the need to bring pen and ruler and, for CW sending, perhaps some type of oscillator and key, although most examiners may prefer to provide these. It may be considered helpful to candidates if they have some idea of the number of other candidates. The order in which the exam segments will be run should also be notified to candidates in order to avoid long periods of waiting for the appropriate section.

Candidates should also be aware in advance of the examination procedures, the ten or five minutes reading time, the need to fill in all the information on the answer sheet, the length of each examination segment, how to sort out any problems with the papers, and the procedure when each section of the exam is finished.

The theory and regulations examinations papers are "multi-choice", i.e. each question contains a statement or question after which there are four alternatives, listed a, b, c, and d. The candidate must decide which of the four alternatives best completes the statement or answers the question, and indicate that choice by encircling the letter of that alternative on the answer sheet. **NOTHING SHOULD BE WRITTEN ON THE QUESTION PAPER.**

Each question carries two marks and, as there is no penalty (apart from not gaining two marks) for a wrong answer, nothing is lost by guessing. A pass mark is 70 % or more. Theory papers comprise 50 questions, to be answered over 1 hour for Novice and 1 1/2 hours for AOC, and regulations papers are 30 questions to be answered in half an hour.

Details on the ANSWER SHEET must be completed

before beginning to answer the questions. Some candidates may find it helpful to study a copy of the answer sheet before attempting the examination. Care must be taken that the question number on the answer sheet matches the number of the question. This check is especially important when going back to answer a question omitted on the first run through the paper.

If there is a problem with any part of an examination paper, such as a page missing from a theory exam, or a question is incomplete or unreadable, this should be drawn to the attention of the examiner. If the validity of a question is in doubt, that should also be brought to the attention of the examiner at the time; then, after the exam is over, it should be discussed with the examiner to ensure that the candidate's complaint is noted and forwarded to WIA Exam Service with the return of the papers.

For the Morse receiving exam there is a two minute practice time, which will allow for adjustment of headphones or settling the nerves, then a few seconds pause before the exam text begins. Several candidates may take the Morse receiving exam at the same time. It is preferable to PRINT the text received in block capitals to avoid any risk of misreading. Writing must cease immediately the text ceases.

For the Morse sending exam, a short practice for any adjustments is allowed before sending the exam text. Sending will be recorded on a tape recorder, with the examiner identifying each candidate by voice beforehand. Start and finish signals must be used, and any errors corrected by sending the error signal and starting again at the **START OF THE LAST WORD CORRECTLY SENT**. For one error properly corrected, an extra 10 seconds overall time is al-

lowed.

Any comment or complaint about the procedures followed or the management of the examinations should be discussed firstly with the examiners.

If not resolved in this manner, it should be brought to the attention of WIA Exam Service.

When all candidates are finished the exams the examiners will mark the papers and Morse, and provide a provisional assessment.

This assessment will be confirmed from WIA Exam Service within a few days of receipt of the returned examination materials.

Please note that it is the candidate's responsibility to hold the Pass Certificates for exam segments until a full set is obtained, at which time they can be presented at any DoTC office for issue of a Certificate of Proficiency and a Station Licence.

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SOME EXPERIMENTS WITH THE SMALL TRANSMITTING LOOP AERIAL

LOYD BUTLER VK5BR
18 OTTAWA AVE, PANORAMA 5041

Introduction

IN SEVERAL OF MY PREVIOUS articles, I have discussed various forms of loop aerials for receiving radio signals. Such aerials are unsuitable for transmitting signals and I thought I would now turn my attention to small loops suitable for transmitting. By definition, the small transmitting loop is one which has a circumference less than one quarter of a wavelength.

Because of its small size, it is possibly an attractive proposition for someone with inadequate space to erect a larger aerial. For example, an efficient loop can be constructed for the 14MHz band about one metre square. The small loop might also be attractive for operation in the field.

The small transmitting loop has been around for a long time but it appears to have been improved for amateur radio by Ted Hart W5QJR who developed a set of equations to calculate the various loop constants and set down parameters for a new design (refer *QST*, June 1986). The latest issue of the ARRL Antenna Handbook also has some excellent material on both transmitting and receiving loop aerials.

The section on small transmitting loops was written by Ted Hart, and this includes his design formulae plus a complete set of worked-out data for practical loops. The design formulae, taken from this section, are repeated in the appendix at the end of our article.

To gain some experience with the small transmitting loop, I experimented with several forms of the loop essentially for use at 14MHz. I selected this band because the loop dimensions, suitable for 14MHz, enabled construction to be easily handled.

Because of its narrow bandwidth, the transmitting loop tuning has to be tracked as frequency is shifted across the band. Ted Hart suggests remote motor controlled tuning. In the course of my discussion, I will introduce another idea which I found satisfactory to track the tuning across the band without the use of the motor controlled tuning.



Halos can be handy, but for flat dwellers loops can be heaven sent.

From Ham Radio Today — April 1988

The Difference Between Transmitting & Receiving Loops

One might well ask why our receiving loops are unsuitable for transmitting. Most other aerial systems are reciprocal in operation, so why not these? To answer this, we must point out that in our receiving loop we are interested only in signal voltage. The loop is parallel tuned and coupled to the high impedance input of an amplifier enabling the Q factor of the tuned loop to multiply the signal voltage. In our receiving loop, we are not really interested in power efficiency. If we were, we would find that most of the signal power is consumed in the loss resistance of the loop. However, to transmit a signal, RF power must be transferred into the loop and developed across the radiation resistance of the loop.

The radiation resistance of a small loop is typically only a fraction of an ohm. To achieve any reasonable figure of efficiency, the loop loss resistance must also be a very low value otherwise most of the power is dissipated in the loss resistance. Wire loops as used in receiving have a loss resistance in the order of ohms, and to achieve the low loss resistance needed, transmitting loops are made with large

diameter copper tube. Special attention must also be given to minimising resistance in the loop tuning and matching components, particularly the loop tuning capacitor.

The equivalent circuit of the loop aerial is shown in figure 1. The predominant component is the loop inductive reactance, which is large compared with the sum of the radiation resistance R_r and the loss resistance R_L . Because of the high ratio between reactance and resistance, Q factors are extremely high, in the order of many hundreds, and often greater than 1000. The loop is set to resonance at the operating frequency by parallel capacitance C_t connected across the loop. Maximum operating frequency is limited to a frequency set by the resonance of the loop inductance L with the loop stray capacitance C_d . Because of the high Q, bandwidth of the loop is very small and it is necessary to alter the tuning capacitance when changing frequency more than a few kHz. The Ted Hart design calls for remote control of the tuning network which adds some complication to the construction of the loop aerial system.

Tuning Capacitors

Selecting the tuning capacitor requires special attention. In the *QST* article, Hart used the two halves of a split stator capacitor in series so there were no wiper contacts, normally in contact with the rotor, to add series resistance. He also recommended the capacitor plates be welded together to reduce resistance rather than be separated by spacers.

Because of the high Q factor, the voltage developed across the capacitor is quite high. Even using only 100 watts of power, the voltage can be as high as 10 to 15 kilovolts. Not only must the capacitor be selected for low resistance, but also its plates must be wide spaced to withstand the voltage. Calculation of the voltage developed is included in the appendix. As a guide to the spacing required, breakdown voltage in air is around 30 peak kilovolts per centimetre.

Matching

One way to match a 50-ohm line to the

low resistance of the loop is to use a balanced L network of shunt X_c and series X_L . As a total reactance equal to the inductive reactance of the loop less the series reactance required for matching. The matching circuit is shown in figure 2. In my initial tests, I used this system, but it does have its problems. First of all, two isolated tuning capacitors must be banded together. A split stator capacitor with common rotor cannot be used. I did find I could operate the tuning quite well without ganging by matching the setting of the two series capacitors at the centre of the band and adjusting only one to tune over the band. I also found the input shunt capacitor could be fixed for the whole band.

Apart from the physical problems of ganged capacitors, the system has inherent loss in the two series capacitors as they provide loop tuning connected via their stator wipers. One way to reduce the effect of this loss resistance is to add capacitance across the loop, in effect increasing the value of C_d . By doing this, the parallel circuit loop constants (figure 3a) can be considered as equivalent to a simple series circuit of inductance and resistance (figure 3b). The equivalent resistance component is much higher than the series resistance of the loop ($R_r + R_L$). The higher the value of C_d , the higher is this component and hence the less effect of loss resistance in the tuning capacitors. Of course, too much capacitance C_d will prevent the loop from being brought to resonance. The fixed capacitor added must also be low loss and withstand the high voltage. I made use of a short length of heavy duty coaxial cable which provides a capacitance of around one picofarad per centimetre. This worked quite well for some time until one day the high voltage developed by the loop blew a hole through the polythene dielectric. A better idea would have been to use fixed plates spaced in air sufficient to withstand the voltage.

All in all, the balanced L network has its limitations as a matching system for the transmitting loop and, in fact, Ted Hart described it as an inefficient system. In his system (figure 4) matching is carried out via a gamma match at the bottom of the loop and separated from the tuning capacitor which is connected across the open ends of the loop at its top. The tuning capacitor is coupled to a stepper motor with gear drive to give adequate tuning resolution. The motor is remotely controlled via a cable which runs through the inside of the loop tubing.

The system I finally installed separated the matching system from the loop tuning, as Ted Hart had done, but made

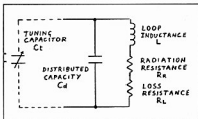


Figure 1. Equivalent circuit of the loop aerial

use of a delta match in place of the gamma match. The reason for this will be explained further on.

The Loop

Ted Hart has pointed out that, for a given length of conductor, a circular loop (or something approaching a circle such as a hexagon) gives more loop area than any other shape and hence it is the best choice of shape. I accept this, but my receiving loops have all been square because it was easy to make up square or diamond shaped loops using a simple frame of two crossed pieces of wood. My first transmitting loops were made up the same way using the outer conductor of heavy duty coaxial cable and, to make a direct comparison, the copper tube loop was followed up with a square of the same size.

My final loop was made up 0.97 metre

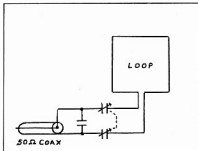


Figure 2. Matching the loop aerial with the balanced L network

square with 3/4 inch copper tube obtained from the local plumber. The tube was cut and assembled to the form shown in figure 5 using copper elbows for the right-angle joints. All joints were silver soldered, thanks to John VK5JL. Details of the loop and calculated constants for 14.2MHz are as follows (Imperial measurements are used because the published formulae, as repeated in the appendix, are given in these units):

Tube Diameter $d = 0.75$ inch
Circumference $S = 12.7$ feet
Area $A = 10$ square feet

Frequency $f = 14.2$ MHz

Power $P = 100$ watts

Radiation Resistance $R_r = 0.137$ ohm

Loss Resistance $R_L = 0.064$ ohm

Efficiency $\eta = 68\%$

Inductance $L = 3.27$ micro-henry

Q factor = 723

Inductive reactance $X_L = 291$ ohms

Bandwidth $B = 19.6$ kHz

Distributed capacity $C_d = 10.4$ pF

Capacitor potential $V_c = 4587$ V

Tuning capacitor $C_t = 28$ pF

Whilst the loop design was aimed at the 14MHz band, the loop can be tuned to other bands, and calculated constants for some of these are as follows:

Frequency	R_r	R_L	Efficiency	Tuning C
7MHz	0.008	0.045	15%	148pF
10MHz	0.034	0.053	39%	67pF
21MHz	0.66	0.077	89%	8pF

(R_r and R_L are in ohms)

It can be seen that operation at as low a frequency as 7MHz is possible, but with low efficiency. The efficiency is improved as the frequency is increased, and at 21MHz efficiency is very high. Operation at 28MHz is not possible because self-resonance occurs at a frequency just below 28MHz. The calculations do not take into account losses in the tuning capacitor which could further decrease the efficiency.

The advantage of the large diameter copper tube is demonstrated by comparing with the same sized loop utilising the outer copper braid of the coaxial cable. (The braid is 5/16 inch diameter). The calculated loss resistance of the coax loop at 14.2MHz is 0.14 ohm and the calculated efficiency is 41 per cent. This compares with 68 per cent for the 3/4 inch copper tube loop.

Tuning the Band Without the Drive Motor

I found a way to remotely tune over the band without the drive motor. The gamma match is replaced by a delta match which is fed with 300 ohm balanced TV open wire line. This type of line has extremely low loss at HF even if used in a tuned mode. The loop tuning capacitor is set for resonance in the centre of the band (say 14.2MHz) and at this frequency the delta taps are adjusted for a 300 ohm match. The open wire line is fed from the transmitter via some form of balanced tuning system (refer figure 6). The Z match tuner does the job very nicely.

To set up the system, the tuner is first loaded into a 300 ohm resistor and adjusted for matching at the centre frequency. This can be done by connecting a noise bridge at the transceiver output and operating in the receive mode. The open wire line is then connected in place

of the resistor and the loop tuning is adjusted for best balance of the noise bridge. Some adjustment of the delta match taps might also be required, but the tuner adjustment must not be altered from the setting determined using the 300 ohm resistor. Remove the noise bridge and verify that there is low SWR on transmit. If necessary, the loop tuning can be trimmed for best SWR. This whole operation is a little tricky because the loop tuning must be carried out within hearing distance of the noise bridge in the receiver. If the loop tuning is carried out using the SWR meter, the SWR meter must be within vision. I found it necessary to tune the loop with it first located close to the transceiver and connected via a short length of the open wire line. If matched properly, the loop tuning can be assumed to be correct for whatever length of line is ultimately used.

Another problem is that the loop is very susceptible to detuning if in close proximity to any conductors, including the human body. This makes setting the tuning capacitor by hand a little tricky.

Now, having set the loop tuning and matching, this is how the system works. If we shift very far from the centre frequency, the high Q loop goes out of tune. The procedure is then to readjust the tuner for low SWR, in effect reflecting down the open wire line into the loop a reactance sufficient to correct for the detuning. Off the centre frequency, the open wire line works partly in a tuned mode. The nature of the impedance change placed across the line by the tuner is obviously a function of line length, but for the various random lengths of line I use myself, the Z match tuner was easily able to handle the correction over each amateur band tested.

For the copper tube loop described, I found a good match to the 300 ohm line was obtained if the delta match taps were set as follows:

- 14 and 21 MHz — each tap 17.5cm from centre
- 10 MHz — each tap right to the end of the tube elbows, 44cm from centre
- 7 MHz — fit the taps on the side tubes, 8.5cm from the top

8.5cm from the top

You may have noticed by now that my delta match is at the top of the loop and tuning across the open ends is at the bottom.

This is the opposite of the Ted Hart loop. One reason for this is that with the heavy variable capacitor at the bottom, the centre of gravity is lower and it hangs better on my rope support. A second reason is that tests were carried with the loop just above body level, and by running the feeders to the top of the loop, they were kept clear above head height.

I experimented with a further idea of leaving the taps set at the 14/21 MHz position and correcting for the mismatch at 7 and 10 MHz with the tuner. This would allow the loop to work at high efficiency in the higher DX bands whilst also permitting lower efficiency operation for more local contacts on the 7 MHz band. (Quite apart from any loss due to mismatch, it was pointed out earlier that, in any case, the efficiency on 7 MHz is inherently low due to the low ratio of R_r to R_L .) Unfortunately, fixing the matching tap settings for all bands does not solve all the problems for multiband operation. The loop tuning capacitor still has to be set to a different fixed value for each band. So my idea of a partly tuned line to eliminate remote motor control of the tuning capacitor is essentially a one-band system, unless the capacitance is pre-switched, or remotely switched when changing bands.

I should make some comment about the 300 ohm open wire TV line discussed. Unfortunately, it is difficult to obtain these days unless a disposal source can be found. Over past years it was in common use to feed TV antennas in fringe TV areas. If this type of line is unavailable, open wire line can be made up using parallel wires kept apart by pieces of perspex, polystyrene or similar insulating material. Although more lossy for the tuned feeder mode of operation, a last resort could be 300 ohm TV ribbon.

Operational Performance

One confusing thing in the literature published on the transmitting loop is the loop directivity. The material submitted by Ted Hart shows a bi-directional radiation pattern with maximum signal in line with the plane of the loop and minimum signals or null at right angles to the plane. This is the same as normally expected around a small receiving loop. I was initially a little confused when my one-metre-square loop operating on 14 MHz clearly provided a bi-directional pattern with its maximum signal at right angles to the plane of the loop. An answer to this anomaly seems to be in the follow-

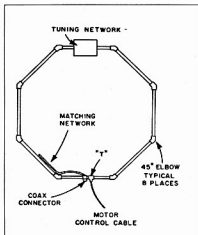


Figure 4. The small transmitting loop — design by Ted Hart W5QJF

ing: The receiving loop pattern is based on the fact that the current is uniform around the perimeter of the loop. When the perimeter is around 0.1 wavelength or greater, this ceases to be true, and the pattern changes, taking up a pattern more like the large loops such as the quad.

The perimeter of my loop is around 0.2 wavelength at 14 MHz and around 0.1 wavelength at 7 MHz. The loop pattern appeared similar for both 14 and 7 MHz. A rough test was carried out on the loop in a receive mode using an oscillator source. This was moved around the loop in a circle of 6m radius at loop height above the ground. Definite nulls were recorded in line with the plane of the loop. At six metres we are in the induction field of the loop and I don't know whether this makes the measurement an anomaly. Nevertheless, several reports from other stations worked on 14 MHz supported maximum signal when the loop was rotated at right angles to the plane of the loop.

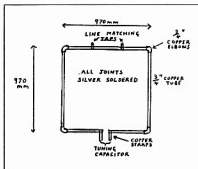


Figure 5. Detail of the loop assembled by VK5BR

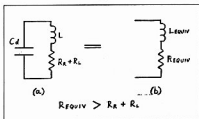


Figure 3. Added shunt capacitance makes the loop resistance ($R_L + R$) appear as a higher equivalent value

Whilst the field pattern horizontally in line with the loop might have pronounced nulls, at higher radiation angles the pattern becomes more omni-directional. I found I could work distant stations in all directions without rotating the loop. For sky wave operation there might be only a slight advantage in having a facility to rotate the loop. Another factor not addressed is the effect of the ground reflected signal. We know that with a dipole we can control the angle of maximum radiation by the height of the dipole above the ground. I obtained quite encouraging results with the loop fairly close to the ground. Perhaps these results could have been improved had the loop been mounted higher.

Operational tests with other stations were first carried out on 14MHz. The loop was set up in my willow tree with the bottom of the loop about one metre above the ground. Switching was arranged so the transceiver could be changed, during transmission, between the loop and either of two full-sized wire aerials oriented in different directions. Signal reports were received from interstate and overseas stations and I was repeatedly told there was little to choose between the signal strength from the loop and that from the particular wire aerial used. This seemed very encouraging considering the small size of the loop. At one stage, I had the loop set up for adjustment inside my garage, which is a steel structure except for one small wooden door and two small windows. I was surprised to find that, even in this shielded environment, I was able to carry out a QSO with stations in NSW and Tasmania. I was also sending quite a strong signal into Victor Harbour over the other side of the ranges.

Some further QSOs were carried out with interstate stations when the loop was tuned up on 7MHz. This, of course, was back under the willow tree. As might be expected because of the lower efficiency on this band, signal strength reports for the loop were two or three S points below that given for my half-wave inverted V.

Summary

An introduction has been given to the small transmitting loop aerial. Considering its small size, its performance is quite surprising. If one has space for a full sized aerial then there is not much point in building this type of loop. However, if you have limited space, or you need a compact aerial system to operate in the field, then the small transmitting loop might be a proposition. Its biggest problem is its narrow bandwidth and the need to carefully peak up its tuning whenever

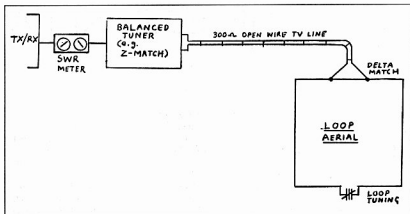


Figure 6. Matching system using open wire TV line. The loop is resonated with the line matched at band centre frequency. To tune the loop across the band, reactance is reflected down the line.

shifting frequency across the band. This can be done using a remote controlled motor with reduction gearing system driving the tuning capacitor. I have suggested another method using a partly tuned open wire TV transmission line.

Copper tube and copper elbows for construction of the loop can be obtained from local plumbing suppliers. A suitable tuning capacitor, with low resistance loss and plate spacing to withstand the high voltage, might be more difficult to pro-

cure.

If you are interested in the small transmitting loop, I suggest you read at least one of the two references given below.

References

1. Hart, Ted W5QJR — Small, High-efficiency Loop Antennas — *QST* June 1986.
2. Loop Antennas — Chapter 5 — *The ARRL Antenna Handbook*, 1988 issue.

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APPENDIX

LOOP DESIGN FORMULAE FROM THE ARRL ANTENNA HANDBOOK

Basic Equations for a Small Loop

$$\text{Radiation resistance, ohms } R_R = 3.38 \times 10^{-4} (fA)^2$$

$$\text{Loss resistance, ohms } R_L = 9.96 \times 10^{-4} \sqrt{f} \frac{1}{d}$$

$$\text{Efficiency } \eta = \frac{R_R}{R_R + R_L}$$

$$\text{Inductance, henrys } L = 1.9 \times 10^{-4} S \left(7.353 \log_{10} \frac{96}{\pi d} - 6.386 \right)$$

$$\text{Inductive reactance, ohms } X_L = 2 \pi f L \times 10^6$$

$$\text{Tuning capacitor, farads } C_T = \frac{1}{2 \pi f X_L \times 10^6}$$

$$\text{Quality factor } Q = \frac{f \times 10^6}{\Delta f} = \frac{X_L}{2(R_R + R_L)}$$

$$\text{Bandwidth, hertz } \Delta f = \frac{f \times 10^6}{Q} = (f_1 - f_2) \times 10^6$$

$$\text{Distributed capacity, pF } C_D = 0.825$$

$$\text{Capacitor potential, volts } V_C = \sqrt{P X_C Q}$$

where

f = operating frequency, MHz

A = area of loop, square feet

S = conductor length, feet

d = conductor diameter, inches

η = decimal value; dB = $10 \log_{10} \eta$

P = transmitter power, watts

THE ROSE NETWORK

BARRY WHITE VK2AAB
28 REDGRAVE RD, NORMANHURST 2076

History

ABOUT 1985 WE READ ABOUT the operation of NET-ROM in the USA and decided to purchase some Eproms for VK2RPH and VK2RPN. These were installed and, after some initial problems, they worked well between Sydney and Newcastle. However, some amateurs did not like the method of identification and complained to DoTC.

After being instructed by DoTC to remove the two NET-ROM repeaters VK4RPH and VK2RPN, AAPRA cast around for another networking protocol that could be used by all amateurs.

One of the first we examined was TEXNET. Unfortunately this had the same problem as NET-ROM in that the packets displayed the same identification format as NET-ROM at the originator's end.

TCP/IP was in some use at the time, but as it could not be used except by those with IBM/clones and considering most of the money available was provided by the purchasers of C64 packages, and approximately 65 per cent of amateurs at that time used other than IBM/clones, it was not a practical option.

A bulletin which appeared in Australia referred to a networking system called Rose. The information indicated it might comply with DoTC requirements which at that time were in process of being formulated. Discussions with DoTC indicated the method of identification was satisfactory. Rose was then installed in HADARC's repeater VK2RPH.

Over the past three years much work has been done on the software to the point where good reliability has been achieved.

Hardware

Most Rose switches in Australia use the Paccom DR200 dual port controller, while overseas most installations use TNC2s, either as stand-alone switches or use two back-to-back TNC2s connected by a cable on the RS232 port.

AAPRA chose to use the DR200 because of better throughput speed and cost. Unfortunately, there were a number of hardware weaknesses in the DR200. Several modifications were devised, mainly to the reset circuit.

Six repeaters in Australia are using

TNC2s and Tiny 2s with excellent reliability. The modified DR200s now give good service, although the reset circuit still has some sensitivity to noise impulses. Spurious resets do not cause failure of the switches' operation.

Successful tests at 19200 baud full duplex on the RS232 port have been conducted. With suitable modems and radios network speeds as high as this will give sufficient capacity for the foreseeable future.

Software

Call signs and addresses are implanted into the eeprom by the MAKEPROM.EXE program, together with txdelay, full duplex, connect texts, maxframe for each port etc. Applications programs are uploaded remotely and provide the following auxiliary functions:

Config: This application receives the configuration file and sets up the networking tables.

Heard: Provides a list of the most recently heard stations and enables stations in other parts of the network to ascertain which stations are currently on air and available for contact.

Users: Provides information on the amount of memory in use and who is connected to whom and which X.25 links are being used.

Info: This application sends to the user the information text uploaded with the configuration file. It also provides plain language text of reasons for disconnections.

Operational Sites

The following is a list of fully operational sites

VK2RPH	247600	Hornsby
VK2RPS	487100	Mittagong
VK2RAO-3	636500	Orange
VK2RTM	676000	Tamworth
VK2RPW	677700	Nowendoc
VK2RPL	668900	Lismore
VK2RET		Taree
VK2RMB	245000	Terrey Hills
VK2RDX	633600	Mt Bindo
VK2RPT	694700	Tumut
VK2RCC	684200	Conabarabran
VK2RLO	689000	Mt Lookout
VK2RCH	665200	Coffs Harbour
VK2RPA	269200	East-<->West
VK4RAT	772800	Townsville
VK6RPA	942120	Perth

VK6RAP 939750 Roleystone Planned Rose Switches

VK2RSD*	442100	Nowra
VK2RPN*	492600	Newcastle
VK2RAW*	448500	Wollongong
VK2RAY*	602000	Albury
VK4RMK*	795700	Mackay
VK4RBD	793500	Blackdown
VK4RZC	744100	Maleny

VK5RAD*	800001	Adelaide
VK5RPM*	870001	Kingston
VK5RPM*	870002	Mt Gambier
VK5RSV	812300	O'Hallorans
VK5RMC	850001	Mt Compass

*Equipment supplied but not yet installed.

The Eastnet<->Westnet Link

In April 1990 we were made an offer we couldn't refuse. A communications company offered AAPRA and WAADCG a 1200-baud circuit between Sydney and Perth.

Licences for VK2RPA and VK6RPA were obtained, and each terminal was fitted with Rose switches UHF radios. These switches connect to the network as shown on the next page.

Network Capacity

Some comment has been made of the capacity of the existing Rose network and its ability to handle the required amount of traffic.

At present the network is able to handle satisfactorily the traffic on offer. Considerable traffic is passing through the Rose network between different parts of NSW and to Western Australia. BBS forwarding is occurring several times every hour, yet the circuit between various parts of VK2 and to VK6 is nowhere near full capacity. If, with time, greater capacity is needed, higher speed modems and full duplex may need to be employed. This will require significantly greater expenditure per site. If this increased demand was to be reflected throughout the network a very significant amount of money would be needed. If this expenditure was restricted to what may be considered "main trunk" routes at least 10 sites would need upgrading in New South Wales alone. If similar upgrading is to take place in Queensland and South Australia, another 10 to 15 sites would

eventually need large expenditure for equipment additions.

From where is this money to come? It will have to be raised from those who feel a worthwhile improvement will result, and at present there are not sufficient numbers feeling sufficiently constrained by the network to dig deep into their pockets.

How much money would be needed? Well, that is very difficult to answer, but the only figures I have been able to ascertain indicates that about \$1500 to upgrade each of 10 sites in VK2 would be required. I have made rough estimates of expenditure, and my figures tend to confirm the \$1500.

This is a very substantial amount of money just to upgrade the existing "mainline" sites. It should be remembered that the packet operators in the various clubs are in a minority.

AAPRA feels it is better to wait until it becomes certain which parts of the network will need upgrading and then spend the limited funds on that part. This may not only save money but also save work.

Future Developments

Most effort will be expended in extending the network into areas not at present served. The embryonic network in Queensland is expected to grow down the coast to Brisbane, as the clubs along this difficult long coastline begin to see the advantages of establishing a network. Significant funds from both AAPRA and the clubs will be needed to add to the 2000s AAPRA supplied digipeaters and DR200s installed in Queensland at present.

In South Australia, a modest start has been made on the Rose network which will include about eight switches.

Western Australia has a network of four Rose switches, which is currently being linked to VK2RAP to enable connection to the Eastnet<->Westnet circuit. Additional Rose switches are to be installed in country areas.

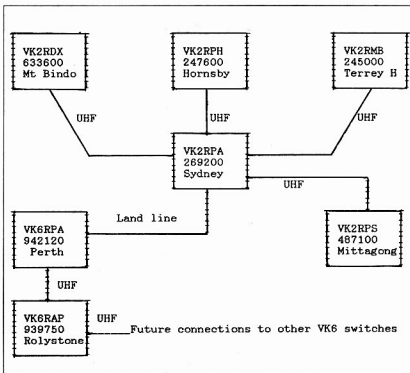
Connection by HF to overseas networks is not possible due to the current attitude of DoTC. There is, however, interest from the managers of networks in Central America and USA, but there are no currently operational HF networks on a permanent basis.

Software development of "Broadcast" modes and "Conference" facilities is in the works, but no timetable has been announced.

Addendum to Rose Network Development Document for Canberra Conference

HF Network Proposal

To connect together by means of VHF



or UHF circuits the remote parts of the Australian packet networks would involve prohibitive costs. We cannot expect further windfalls of the nature of the Eastnet<->Westnet link will occur. Also, the very large number of repeaters in the chain would slow the "round the loop" times by an unreasonable amount.

Therefore consideration should be given to the use of HF for the network. At present the DoTC will not permit HF networking, but a reasonable case can be made for HF use. The packet community should make further requests of the WIAFE to make representations to DoTC on this matter.

The suggested modulation for such a system is PSK at 1200 baud. The success of the BBSs with this mode has been noted. The major decision to be made is the frequencies to be used. The following frequencies are suggestions only and would require a considerable amount of testing.

Australia wide coverage most daylight hours 18.110MHz.

Coverage 1500km range during most daylight hours 10.135MHz.

Coverage 1500km range during night hours 7.028MHz.

With HF network nodes in a number of locations around Australia the ability to route via alternative paths could overcome some unusable propagation conditions. It should not be expected that 100

per cent availability could be achieved. The signal levels required would be higher than that which is satisfactory for BBS operations due to the need for greater reliability of contact. This requirement comes about because of the expected realtime QSOs. Automatic QSY due to changing propagation would be very useful but not necessary initially.

The success of such a network would centre on the establishment of stations with the best practical antennas. In Sydney the WIA has indicated it would consider hosting such an installation at Dural. This would enable large fixed wire beams to be erected on the site. Antennas such as Lazy Hs, Sterba Curtains or Rhombics on the higher frequencies. Other groups may have difficulties with antennas of this type, but they do not need to be erected in major population centres. The HF network nodes could be installed anywhere within the remote network. Most packet groups throughout the country would have members who have suitable properties or could gain access to sufficient real estate to erect a large wire array.

The size of the antennas likely to be of use would require a ground area of approximately 150-200 feet in length and would give a gain of about 12dB. The top of the antenna would need to be about 50 feet high.

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WIA Divisional Bookshops

The following items are available to WIA members from Division Bookshops
(see the WIA Division Directory on page 3 for the address of your Division)

ANTENNA BOOKS

Ant. Compendium Vol 2 Software only	EX293	\$18.00
Antenna Compendium Vol 1 ARRL	EX163	\$19.80
Antenna Compendium Vol 2 & Software ARRL	EX294	\$32.40
Antenna Pattern Worksheets Pkt of 10	EX292	\$21.60
Antenna Handbook - Orr - 1988	EX217	\$15.60
Antenna Impedance Matching - ARRL - 1989	EX257	\$27.00
Antenna Noise W/FF - ARRL - 1987	EX179	\$18.00
Antenna Pattern Worksheets Pkt of 10	EX211	\$5.40
Antennas 2nd ed John Kraus - 1988	EX259	\$93.60
Beam Antenna Handbook - New Ed. 1990 Orr	EX215	\$17.40
Cubical Quad Antennas - Orr	EX214	\$13.10
HF Antennas - Moon RSGB - 1988	EX188	\$27.00
Novice Antenna Notebook DeMaw - ARRL	EX182	\$14.40
Practical Wire Antennas - RSGB	EX296	\$25.20
Reflections - Software 5 inch disk	EX358	\$18.60
Reflections - Transmission Lines The Book - 1990	EX348	\$36.00
Smith Chart Expanded Scale PK of 10	EX303	\$2.90
Smith Charts S/Scale 1 SET co-ord Imp/Adm/Pack of 10	EX301	\$6.10
Smith Charts Stand Alone 1 SET Cover, PK of 10	EX300	\$5.90
The Antenna Handbook - ARRL 1991 edition	EX370	\$36.00
The Truth About CB Antennas - Orr	EX219	\$15.60
Transmission Line Transformers ARRL 2nd Edition - 1990	EX329	\$36.00
Vertical Antenna Handbook - Lee - 1993	EX284	\$16.70
Vertical Antennas - Orr - 1988	EX220	\$14.30
Yagi Antenna Design - ARRL - 1986	EX164	\$27.00

ATV BOOKS

The ATV Compendium - BATC	EX270	\$14.20
The Best Of CQ-TV - BATC	EX273	\$14.20

FICTION

CQ Brings Danger - ARRL	EX206	\$3.40
CQ Ghost Ship - ARRL	EX204	\$3.40
Death Valley QTH - ARRL	EX205	\$8.40
Grand Canyon QSO - ARRL	EX207	\$3.40
Murder By QRM - ARRL	EX208	\$3.40
SOS At Midnight - ARRL	EX209	\$3.40

HANDBOOKS

1991 ARRL Handbook	EX337	\$47.50
Electronics Handbook - ARRL - 1988	EX201	\$21.60
Motorola RF Device Data - 2 Volumes	EX047	\$22.10
Radio Communication Handbook - RSGB	EX266	\$50.40
Radio Data Reference Book - RSGB - 1985	EX189	\$32.40
Radio Handbook 23rd edition - Bill Orr	EX224	\$53.90
Radio Theory For Amateur Operators - Swainson - 1991	EX253	\$38.70

HISTORY

200 Meters and Down 1936 - ARRL	EX198	\$7.20
50 Years of the ARRL - 1981	EX198	\$7.20
Big Ear - Autobiography of John Kraus WBKJ - 1976	EX353	\$11.30
Golden Classics of Yesterday - Ingram	MF130	\$18.50
Spark to Space - ARRL 75th Anniversary - 1990	EX310	\$36.00

INTERFERENCE BOOKS

Interference Handbook - Nelson - 1989	EX181	\$16.00
Radio Frequency Interference - ARRL	EX186	\$8.50

MISCELLANEOUS

Amidon Ferrite Complete Data Book	EX044	\$5.90
Design Notebook W/FF - ARRL	EX357	\$18.00
Help For New Hams DeMaw - ARRL	EX308	\$18.00
Hints and Kinks 12th edition - ARRL	EX330	\$14.40
Novice Notes, The Book - ARRL GST	EX298	\$10.80
QRP Classics - ARRL GST	EX323	\$21.80
QRP Note Book - DeMaw ARRL	EX170	\$10.80
Radio Astronomy 2nd edition - John D Kraus - 1986	EX262	\$71.90
Shirley Receivers Past and Present	EX253	\$15.80
Solid State Design - DeMaw ARRL	EX171	\$21.50

MORSE CODE

Advanced Morse Tutor - 3.5 inch Disk	EX328	\$36.00
Advanced Morse Tutor - 5.25 inch Disk	EX328	\$36.00
Morse Code 2 Tapes Novice Code Course - Gordon West	EX228	\$17.90
Morse Code 2 Tapes 13-20 WPM Code Course - Gordon West	EX231	\$63.90
Morse Code 6 Tapes 5-13 WPM Code Course - Gordon West	EX320	\$63.90
Morse Code 6 Tapes Morse Code Course - Gordon West	EX229	\$63.90

Morse Code Tapes Set 1: 5-10 WPM - ARRL	EX331	\$18.70
Morse Code Tapes Set 2: 10-15 WPM - ARRL	EX332	\$18.70
Morse Code Tapes Set 3: 15-22 WPM - ARRL	EX333	\$18.70
Morse Code Tapes Set 4: 13-14 WPM - ARRL	EX334	\$18.70
Morse Tutor 5.25 inch IBM Disk	EX187	\$15.70

OPERATING

Amateur Radio Awards Book - RSGB	EX297	\$27.00
DXCC Companion - 1990	EX345	\$10.80
Low Band DXing - John Devoldere	EX195	\$18.00
Maidhead Locator-Grid Atlas - ARRL	EX197	\$9.50
Operating Manual - ARRL - 1980 3rd Edition	EX192	\$27.00
Operating Manual - RSGB - 1985 3rd Edition	EX359	\$25.20
Passport to World Band Radio 1991	EX346	\$30.50
Preflex Map - The World Flat on Heavy Paper	EX335	\$14.40
Preflex Map of North America	EX336	\$14.40
Preflex Map of The World	EX334	\$7.20
Radio Amateurs World Map	EX236	\$7.20
Short Wave Propagation Handbook	EX268	\$18.70
The Complete QRP - Bob Locher - 1989	EX194	\$18.00
Transmitter Hunting - TAB - 1987	EX222	\$33.30

PACKET RADIO BOOKS

AX.25 Link Layer Protocol - ARRL	EX178	\$14.40
Computer Networking Con (Packet) No 5 1986 - ARRL	EX167	\$18.00
Computer Networking Con (Packet) No 6 1987 - ARRL	EX168	\$18.00
Computer Networking Con (Packet) No 7 1988 - ARRL	EX184	\$22.50
Computer Networking Con (Packet) No 8 1989 - ARRL	EX295	\$21.60
Computer Networking Con (Packet) No 9 1990 - ARRL	EX360	\$21.60
Computer Networking Conf (Packet) 1-4 1982/5	EX166	\$32.40
Gateway to Packet Radio 2nd edition - ARRL	EX169	\$21.60
Packet Radio Made Easy - Rogers	MF132	\$18.50
Packet Users Notebook - Rogers	EX285	\$18.70

SATELLITE BOOKS

Oscar Satellite Review - Ingram - 1988	MF131	\$15.30
Satellite AMSAT-NA 5th Symposium 1987 - ARRL	EX182	\$15.80
Satellite AMSAT-NA 6th Symposium - ARRL	EX199	\$15.80
Satellite Anthology - ARRL	EX160	\$14.40
Satellite Experimenters Handbook 1990 edition	EX177	\$36.00
Space Almanac - ARRL - 1990	EX299	\$36.00
Weather Satellite Handbook - ARRL - 1990	EX324	\$36.00
Weather Satellite Handbook Software only - ARRL	EX326	\$18.00

VHF/UHF/MICROWAVE

All About VHF Amateur Radio - Orr - 1988	EX216	\$15.60
Microwave Handbook Vol 1 - RSGB - 1989	EX318	\$63.90
Microwave Update Con. 1987 - ARRL	EX174	\$15.90
Microwave Update Con. 1988 - ARRL	EX183	\$15.80
Microwave Update Con. 1989 - ARRL	EX321	\$21.60
Mid Atlantic VHF Con. October 1987 - ARRL	EX175	\$15.80
Spread Spectrum Source Book - ARRL - 1991	EX365	\$36.00
UHF Compendium Part 1 & 2 Vol 1	EX250	\$67.50
UHF Compendium Part 3 & 4 Vol 2	EX251	\$67.50
UHF Compendium Part 5 German Only	EX254	\$50.20
UHF/Microwave Experimenters Manual - ARRL - 1990	EX325	\$40.50
UHF/Microwave Experimenters Software 5 inch Disk - ARRL	EX327	\$18.00
VHF 21st Central States Con. 1987 - ARRL	EX172	\$15.80
VHF 22nd Central States Con. 1988 - ARRL	EX173	\$15.80
VHF 23rd Central States Con. 1989 - ARRL	EX286	\$15.80
VHF 24th Central States Con. 1990 - ARRL	EX322	\$21.60
VHF/UHF Manual - RSGB	EX267	\$42.50

WIA MEMBERS SUNDRIES

Log Book Covers		\$16.00
WIA Badge - Diamond		\$4.00
WIA Badge - Diamond With Call Sign Space		\$4.00
WIA Badge - Traditional Blue		\$4.00
WIA Badge - Traditional Red		\$4.00
WIA Car Window Sickers		\$0.50
WIA Tape - Sounds of Amateur Radio		\$7.00

WIA PUBLICATIONS

Australian Radio Amateur Call Book - 1992		\$10.00
Band Plans Booklet		\$2.90
WIA Log Book - Horizontal or Vertical Format		\$5.00
WIA Novice Study Guide		\$1.50

Not all items above are available from all Divisions (and none are available from the Executive Office).

If the item is carried by your Divisional Bookshop, but is not in stock, your order will be taken and filled as soon as practicable. Due to currency fluctuations some prices may change without notice.

All prices are for WIA members only - postage and packing, if applicable, is extra.

All orders must be accompanied by a remittance.

GETTING STARTED WITH AMATEUR RADIO SATELLITES

PART 10

BILL MAGNUSSON VK3JT
359 WILLIAMSTOWN RD, YARRAVILLE 3013

Finding your bird, or "don't let that computer intimidate you"

A FAMOUS ENGLISH CHEF ONCE published a recipe for beef consommé which began "First slaughter your ox". His philosophy is also true of amateur satellite operation. First you have to find your satellite. It's no good having the best equipped station in the galaxy if you don't know exactly where the bird is, or when it's due to appear in your sky.

I was recently looking over some material I downloaded from a local BBS in 1990 regarding the NASA space shuttle SAREX mission. I was amazed by one of the "instructions". They appealed to users not to call the shuttle unless it was above their horizon. At first this seemed to be quite a bizarre thing to say. Surely no one would be silly enough to just call indiscriminately, hoping to get a contact. But yet, apparently some people do. I wish them luck, but I hope those of you who have been following this series would realise there's a bit more to it than that.

Looking at the scene today it's hard to imagine that much of the early development of the amateur radio satellite program happened in the days before the home PC became as commonplace as TV and hi-fi sets. But it did.

At the time when project Oscar Australis (the Oscar-5 package) was being developed and built in Melbourne, computers were huge and clumsy by today's standards. They existed only in universities and large commercial and government organisations.

What changes we've seen in those few years! What would those early pioneer engineers and amateurs have given for an IBM486? Well, they had to make do with what they had at the time. We amateur users had to do much the same.

"Tracking" of satellites in those days was done using devices like "Oscar-locator" which consisted of a world map, usually polar projection, and a transparent plastic overlay. The overlay showed what we now call footprints of the various satellites, and by positioning it on the map we could have a pretty good guess at

when the satellite would come up over our horizon.

It involved establishing an equator crossing time and longitude and then extrapolating that into the future. The modern-day amateur satellite user eagerly awaits new sets of keplerian elements to update computer programs; in the early days we looked for new sets of EQXs (equator crossing data). Oscar-locator and similar devices are still produced and are useful if you don't want to devote a computer to the task of finding your satellite. They have serious limitations though, particularly with highly elliptical orbits.

All the amateur satellites at that time were in near polar, near circular orbits so, elementary as it was, the system worked. It still does. Quite a few weather satellite enthusiasts use this method, leaving their computer to produce the pictures.

Although you had a pretty good idea of when the satellite would come up and go down, exactly where it was in the sky during a pass was largely a matter of guesswork. Some clever electro-mechanical systems were devised to cope with this, and good QSOs and telemetry reception were common. I'll never forget our excitement when Brian VK3BLW came across a copy of a brand new computer program called Basic Orbits by Dr Tom Clark W3IWI. Brian had access to a computer and was able to produce what to us at the time were unbelievably accurate printouts of the passes of Oscars 6, 7 and 8.

Things moved along rather quickly from that time, and it wasn't long before affordable home computers became available. Dick VK3ARR and I built a Microbee from a kit, but not being able to afford or acquire a printer we scribbled down the data for our early satellite mountaintop expeditions. Later on, Dr Karl Meinzer DJ4ZC, the designer of Oscar-10, devised an excellent compact program for use in the "Sharp" range of pocket computers. This was a great boon to portable DXpedition stations and

newcomers not wishing to outlay \$2000 or more on a PC. Many amateurs learned the elements of basic programming by studying the routine listings in these little computers.

A PC these days is considered to be an essential part of any satellite station, and that brings us to the subject of this article. What mysterious things go on inside a computer that can turn a set of keplerian elements into look angles for pointing our antennas? A lot of people regard these goings-on as magic. They're not. A computer used in this way is doing its simplest and most basic task. It is being used as a lighting fast calculator. It can perform a wide range of complex mathematical tasks in a logical, preset order to come up with answers in a few seconds that would take hours or days of calculations on paper. It doesn't take time off for a cuppa, and it doesn't make mistakes. It's a fair bet that if you get the wrong answer from a computer then YOU made the mistake.

There's a very true saying regarding computers and their operation. "Rubbish in, rubbish out". The computer will perform its tasks diligently, but it will not make assumptions. If there's an error in the logic of your program or if you enter some silly data, the computer will work on it as instructed. Its operating system, whether CP-M, ROM-based or DOS, will carry on regardless. Its output may be meaningless to you, but it will be correct as far as the computer is concerned. You have to be very careful when updating keplerian elements and other data and entering the input information the computer requires. Clever programmers include routines to exclude ridiculous data, but you still need to be careful.

The keplerian elements discussed last month express the satellite's position relative to the earth and the stars using angles measured from the centre of the earth (the geo-centre). We aren't operating from the centre of the earth, but the computer program sets out first to calculate the satellite position relative to this

point. Then it calculates the position relative to your particular latitude and longitude. Of course, your program has to be supplied with this data. Survey maps of your area or your local airport or shipping terminals are good sources.

To find the satellite's position around the orbit path the program uses the mean anomaly at epoch time, adds the number of complete orbits since that time (with an adjustment for drag), then adds the fraction of un-completed orbit. This establishes a new "present time" mean anomaly (ie, where it is around the orbit right now). American programs call this the PHASE. I find this term a bit misleading.

Now, according to Kepler's reckoning, the earth lies at one of the foci of the orbital ellipse. Remember the foci? They're like the centre of a circle, but an ellipse has two of them. It's more correct to say the centre of mass of the "earth + satellite" is exactly at one of the foci, but in the case of the earth, which is very, very large, and a man-made satellite, which is very, very small by comparison, it can be assumed the earth's geo-centre is at one of the foci.

Incidentally, this assumption is one of the reasons why many tracking programs will not track the moon. The moon is very large compared with a man-made satellite. So large, in fact, that as well as the moon orbiting the earth, it could be said the earth actually orbits the moon to a degree. They sort of waltz around each other, a bit like a binary star. The moon is really too big to be a satellite of earth. But that's another story. The focus that should be close to the geo-centre of the earth is, in fact, just under the earth's surface directly below the moon.

Quite complicated equations are necessary to resolve this situation, and many programs don't take the trouble. James Miller G3RUH was the first to grapple with this problem, and his SATFOOT program will track the moon to an accuracy of a few minutes of arc. I'm often asked for a set of kep elements for the moon. There's really no point in putting them in unless the program has the necessary calculation routine (and, if it did, then the kep would already be there).

All man-made satellite orbits are affected to a greater or lesser degree by the gravitational pull and motion of the moon. Fortunately, for our purposes, these effects are very small and can be neglected.

Elliptical equations derived from Kepler's laws are employed to calculate the sub-satellite point. This is the point on the earth directly below the satellite on a line from the satellite to the geo-centre.

The elements' eccentricity, right as-

cension of ascending node, argument of perigee and inclination are used. With the exception of the eccentricity, these are angles and are expressed in degrees. Problem!! Computers don't usually work in degrees, so all angles need to be converted to radians. Fortunately this is one of the things computers can do easily. When calculated, the sub-satellite point comes out in celestial co-ordinates and it's finally converted by the program into earth co-ordinates (latitude and longitude) in respect to the poles, equator and Greenwich. We now have the new mean anomaly and the sub-satellite point co-ordinates. Try doing that with pencil and paper!

During these calculations the distance from the geo-centre to the satellite has been worked out. This is useful later in establishing the range from observer to satellite and the satellite's height above earth. Some programs included these in the printout.

The program has now pinpointed your location in latitude and longitude and the satellite's position around its orbit. It looks at these points from the centre of the earth and does a series of trig rotations to establish the satellite's position relative to the observer. It uses the earth radius, the observer's lat/long, the sub-satellite lat/long and the satellite's distance from the geo-centre at the new mean anomaly. Good programs will take into account the oblateness or out-of-roundness of the earth when using the earth radius in this way. It varies from place to place, you see. Some programs don't worry about this, but it is important enough for better programs to take it into account.

The "look angles" are a result of these calculations. The look angles are, of course, the elevation and the azimuth. Elevation is measured in degrees up from the observer's horizon (0 to 90 deg). Azimuth is measured in degrees east from true north — beware not magnetic north — at the observer's location (0 to 360 deg).

As far as tracking the satellite is concerned, that's all we need to know. We can use the look angles to point our antennas. With a suitable electro-mechanical interface the computer can even do this for us. All we need do is keep those kep elements up to date. By the way, the higher the gain of your antenna system, the more particular you have to be in keeping the kep elements current. Can you see why? If you got that one right, can you see why current keps are even more important for the very low orbit satellites?

Now, back to business. Along the way, the program has already calculated some

other things which can be useful, so most programs don't just leave it at that.

The new mean anomaly, for example, can be used in conjunction with a transponder schedule to tell us which transponder or beacon is turned on at any time. The transponders or operating schedules are switched at certain points in the orbit, on at MA23, off at MA217 etc. If your program has this feature then you will have to keep the transponder schedule up to date. Your program will contain details of how to make these changes. Given the correct data it requires only a simple **if then** logic statement for the computer to decide what's on or off at any time. Computers are good at logic.

The sun's angle relative to the satellite is important in illuminating the solar cells and designing the transponder schedule.

The sun angle is calculated along with look angles using RAAN etc, above. Satellite eclipses and visibility can be predicted using sun angles. Some programs print these out along with other data.

If the satellite's attitude (ie where its antennas are pointing) is known relative to the orbit path, then the squint or off-pointing angle can be calculated in respect to the observer's location.

This is done by expressing the elevation angle from the satellite's perspective and adding in the satellite attitude angles. James Miller's plan-10 program was first to incorporate this very important calculation in the early 1980s.

Most modern programs now feature this calculation. Once again you have to update the attitude data. Attitude is expressed using the Bahn co-ordinate system. The angles BLON and BLAT (pronounced beelon and beelat) are used to fix it relative to the major axis and plane of the orbital ellipse respectively. BLON 180 and BLAT 0 means that the antennas are pointing at the centre of the earth when the satellite is at apogee. (Draw a little sketch to prove this one to yourself).

Most squint angle calculations assume the satellite is spin stabilised and therefore permanently pointing at star "X". Some amateur satellites, however, are three-axis stabilised, and the antennas are permanently earth pointing.

The UoSats and the proposed phase 3D and French Arsene are examples. Some programs contain a routine to take this into account and provide squint angle information for three axis stabilised satellites.

The range is calculated along with look angles as some of the distances involved come out as part of the trig solutions.

To be continued next month

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EQUIPMENT REVIEW

THE AMERITRON AL-811

HF LINEAR AMPLIFIER

RON FISHER VK3OM.

GAALANUNGAH

24 SUGARLOAF RD, BEACONSFIELD UPPER 3808

IF YOU ARE IN THE MARKET for an HF linear amplifier, you will find a rather limited selection at the present time. Not only that, those that are available tend to be very expensive. If your budget runs to \$3000 plus, there are a few nice solid state and valve final units available. But what about a conservative 400 watts for \$1449? Sounds good? Well let me tell you all about the AL-811. Firstly, it is imported by that go-ahead firm of Stewart Electronic Components.

But, first let's go back a few years. It was in November 1939 that the RCA Manufacturing Co first announced the arrival of the new 811 power output triode valve at the bargain price of only \$3.50 each. Actually, the 811 was designed primarily as a class 'B' audio tube and the companion 812 was the one to use in the transmitter final stage. Both tubes had the same power rating but the 811 had a higher amplification factor making it very suitable for class B operation. Of course in those days, single side-band transmission was all but unknown on the amateur bands, although it was in limited use in commercial radio applications. Probably not initially realised by the RCA Tube Co, the 811 would in time make a very suitable SSB linear amplifier. Well 52 years on, the 811 is still with us, now made in China, and has been chosen by Ameritron for its latest linear amplifier. The AL-811 (you can now see how it gets its name) actually uses three 811A valves in parallel as a grounded grid class AB2 amplifier for both SSB and CW modes. The 811A valve, incidentally, is an upgraded 811 that was introduced in the early post-war years, with the plate dissipation increased from 55-65W but otherwise unchanged. So much for the historical side of things, let's now have a detailed look at the AL-811.

The AL-811 Technical Details

The AL-811 is a large black box. It is

actually somewhat higher, narrower and deeper than most contemporary equipment. It measures 20cm high, 35cm wide and 40cm deep and weighs in at 13.6kg. Of course this is an all-up weight that includes the heavy duty power supply, but even so, is some 6.5kg less than the popular Yaesu FL-2100Z amplifier. The three 811As are in a grounded grid circuit with the drive from the exciter going into the valve filaments through a separate pi-network for each of the six bands. These are 160, 80, 40, 20/30, 15/17 and



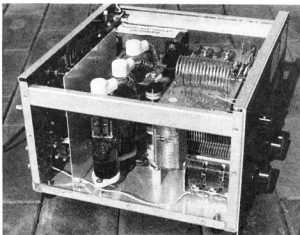
Front view of Ameritron AL-811

12/10 metres. One of the interesting features of American made amplifiers or for that matter amplifiers imported into the US, is that they are not permitted to include the 10m band. This is to stop their use by CB operators on 27MHz. I am not sure this actually stops them being used on the CB band, as in most cases mods to put them on 28MHz (and 27MHz) are quite easy. The AL-811 has been factory 'modified' for 10 and 12m operation but this leaves a strange legacy. The 10m position of the band switch is labelled 'AUX'. Once you get used to this, everything becomes straightforward. Anyhow, back to the circuit description. The power supply uses one transformer to supply power to all circuits. The primary side is tapped for inputs from 100 volts to 240 volts, and these adjustments are made through a removable panel at the back of the ampli-

fier. A bridge rectifier provides 1700 volts output on no load and 1500 volts on full load. Four series connected 210pF capacitors filter the output. A good picture of the internal construction can be obtained from the illustrations. Most of it is on two very large fibreglass printed circuit boards, the first carrying the tank coil winding, with the power supply components at the other end. The second board, mounted near the rear of the cabinet, contains the input Pi-network circuitry and the AC input wiring. The three 811As are mounted vertically in high grade ceramic sockets. Two excellent panel meters give readings of total grid current on one, and either plate voltage or plate current on the second. Both are brightly illuminated and are very clearly calibrated. Front panel switching, apart from the band switch, is for AC power on/off, standby/operate and the meter switch. A red LED indicates when the amplifier is in the transmit mode. There are two tuning controls, one for plate tuning and the second for loading. The plate tuning has a six-to-one vernier control fitted for easy setting. Finally, there is an ALC output to feed back to the driver transceiver to prevent excessive drive power being applied. As we shall later see, this is a most important feature. Cooling is well taken care of with a 20CFM fan fitted on the rear panel.

The AL-811 On The Air.

Connecting up the amplifier is a straight-forward procedure. Standard SO-239 sockets are provided for both RF input and output. Relay switching and ALC output are via RCA (often called phono sockets) connectors. Setting up with most transceivers should only take a few minutes. All of my tests were done with an ICOM IC-745 transceiver as the driver rig and RCA connectors are provided on it for both relay control and ALC input. To tune up, set the band switch to correspond to the exciter, apply a small amount of drive (exciter in CW or AM mode to give steady carrier) and rapidly



Internal View

tune the plate and load controls for maximum output. To do this you will need an external power meter as no output metering is included in the amplifier. Increase the drive from the exciter until maximum output from the amplifier is achieved without exceeding 150mA grid current. And there you have it. Four hundred watts output is obtained in most cases with about 75 to 80mA grid current and about 35 to 40 watts driving power. This should produce a clean signal with most transceivers just loafing along. However now is the time to set up the ALC. Again, it is best to do this with steady carrier feeding the output of the amplifier into a dummy load (you always do don't you?). Increase the drive from the transceiver until you reach maximum output (about 550 watts) then set the ALC adjust on the back of the amplifier for 400 watts output power. In actual fact this was not straight-forward and it was necessary to compromise the output power to an average of 400 watts. I finished up with a maximum output of about 450 watts on the lower frequencies down to about 350 watts on 10 metres. If you settle for 400 watts on the lower bands then the output will be around 300 watts on 10. In operation, the amplifier ran quite cool with just warm air being blown from the cabinet. Plenty of space is required at both the rear and side of the cabinet, so as not to impede the flow of air.

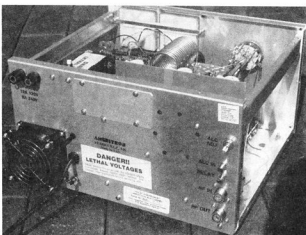
The AL-811 On Test.

For test purposes, I set up the following: Icom 745 transceiver as the driver, a power/SWR meter in the line to the AL-811 and another power/SWR meter between the amplifier and a 50 ohm dummy load. Table 1 shows the resultant figures.

Band	Power	Power	Grid	Drive	Input SWR	Through
MHz	Output	Input	Current	Power	Amp On	SWR amp Off
1.8	400	637w	75	30w	1.1-1	1.1-1
3.5	400	712w	75	35	1.1-1	1.1-1
7	400	765w	75	40	1.2-1	1.1-1
10	400	750w	80	50	2-1	1.1-1
14	400	675w	78	30	1.2-1	1.2-1
18	400	840w	80	40	2-1	1.2-1
21	400	875w	82	42	3-1	1.2-1
24	400	820w	85	40	2-1	1.2-1
28	400	805w	90	40	1.5-1	1.2-1

This chart shows the relative performance of the AL-811 on each band. These figures were taken in the CW mode with the power output adjusted to 400 watts. The input SWR on 21MHz at 3:1 is of some concern. It should be noted the input tuned circuits are adjustable but, as the photo shows, these are not identified on the back panel of the amplifier. This makes the adjustment procedure a bit hit and miss.

In each test, the power was set to 400 watts output. On most bands, this was achieved easily, but on ten metres 400 watts was only just reached. The high input SWR on some bands is of concern but, nonetheless, the IC745 was able to drive the amplifier to our power limit. An interesting point is that the SWR looking through the amplifier (amp on standby or actually switched off) was very low. Some linears are not. I do not run to the luxury of a spectrum analyser to check the intermodulation distortion, but the RCA Transmuting Tube Manual quotes a single 811A in class AB2 with 1500 volts HT and a power output of 160 watts PEP giving -25dB for third order and -30dB for fifth order distortion. This is referred to either of the two tones in a standard two-tone test. For normal PEP



Rear view of the AL-811. Note high volume blower at lower left. The six holes at top right allow access to adjust input tuned circuits. Unfortunately they are not identified.

speech an extra 6dB needs to be subtracted (ie. -31 and -36dB). This is a satisfactory figure although not up to what can be achieved these days. It is, however, about as good as can be expected from most 12V powered solid-state finals. In other words, the signal should be as clean with or without the amplifier. Running at 400 watts output should produce a somewhat cleaner output from both the exciter and the linear amplifiers, by virtue of the fact that each output is operating below IMD specified power.

The AL-811 Conclusions

There is no doubt, the AL-811 linear amplifier is in a class of its own. It is possibly the only linear available that suits the Australian power output limitations almost exactly. It is easy to use, stable in operation and attractive in appearance. And last, but by no means least, the price is right. The instruction manual is also well presented and covers both operation and circuit information. A full circuit diagram and parts list is included.

However, the very best I have left until last. Most amateurs know only too well the price of replacement tubes for their linear amplifiers. A full set of tubes for the AL-811 will cost you a total of only \$105. I know that's a bit more than the 1939 price, but still only about a third of the price of a pair of 572Bs for instance. Not too bad for these days.

My thanks to Stewart Electronic Components Pty Ltd of Huntingdale, Victoria for the loan of the AL-811 linear amplifier. Stewart is sole agent in Australia for AMERITRON.

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The FT-747GX is a compact SSB/CW/AM and (optional) FM transceiver providing 100 watts of PEP output on all 1.8-30MHz amateur bands and general coverage reception from 100kHz to 30MHz. Convenience features include a front panel mounted speaker and unobstructed digital display, dual operator selectable tuning steps for each mode, dual VFO's for split frequency operation and 20 memory channels (eighteen of which can store split Tx/Rx frequencies). Wideband 6kHz AM, and narrow 500Hz CW IF filters are also fitted as a standard feature. Includes Yaesu MH-1 hand microphone. See ARA Review — Vol 11, Issue 11.
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Connector: N-type socket
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EA Jan, Feb, Mar '91

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Just like the FT-1000, Yaesu has designed the FT-990 to be as easy as possible to operate. The front panel layout puts all frequently used controls right where they should be... at your fingertips. All controls are clearly labelled and the digital display provides an abundance of information in an uncluttered and easy to read format. The front panel keypad offers one-touch band selection (160m - 10m) with 2 independent VFOs per band and 90 memories that store the operating data held in both VFOs. You can't help but appreciate the large back-lit analogue meter rather than those confusing bar-graph meters found on other transceivers.

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Two 10-bit DDS and a magnetic rotary encoder provide silky-smooth VFO tuning, pure local oscillator signals, and very fast Tx/Rx change-over... and that's very important for QSK CW and digital modes. The DDS is teamed with an extremely low-noise, high performance receiver front-end using a PIN-diode controlled push-pull RF amplifier followed by a quad-FET ring mixer. The result is a very wide receiver dynamic range from 100kHz to 30MHz. Transmitter signal purity is also enhanced, with circuit noise nearly 90dB down from the carrier.

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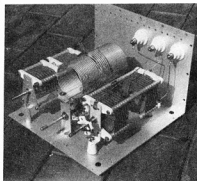
RON COOK VK3AFW
RON FISHER VK3OM.

ATUs And the Two Rons.

I GUESS THAT BY NOW most of our readers have probably formed the impression that the two Rons use "Z" Match ATUs and won't have a bar of anything else. That is, in fact, not quite true, and in a moment I intend to describe an ATU that has been in use in one of the Rons' shacks for well over 25 years. It is, in fact, the only piece of equipment to survive anything like that period of time in his shack, so it must have something going for it. Of course ATUs have a place in some applications and not in others. As we have pointed out in the past, the "Z" Match comes into its own for coupling into balanced feed antennas although it is quite capable of matching low impedance unbalanced lines. Most commercial ATUs, including automatic ATUs that are built into many current model transceivers, are designed to match unmatched coax lines or, in other words, to extend the usable band width of narrow band antennas. If you find you can get along happily without an ATU, don't feel left out. You are probably doing as well or better than your friend who has the latest all singing and dancing (39 memory) ATU.

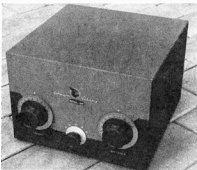
The Johnson Viking Matchbox Antenna Coupler

During the '50s and '60s, the E F Johnson Company of Minnesota USA produced a wide range of amateur equipment. Many of their transmitters were available in kit form and were generally better quality than Heathkit equipment available at about the same time. Unfortunately, not a lot of Johnson equipment got to Australia as during that period we had very stringent import restrictions. However, in 1957, I was lucky enough to obtain a 275W Matchbox from a Victorian amateur who had imported several from the States. Well, what's so special about a Johnson Matchbox? Firstly, like the "Z" Match, it was designed primarily for use with balanced feed antennas, although it was quite possible to use it with mismatched coax lines. It was hand-switched for the 80, 40, 20, 15 and 10m bands but nevertheless has enough coverage to tune the new WARC bands as



Internal view of the Johnson Matchbox — the left-hand capacitor is the dual differential unit discussed in the text.

well. It was produced in two versions, one rated at 275 watts input to the final amplifier using AM, and the other rated at 1000 watts input on AM. In those days, transmitters were always rated for input power to the final amplifier. We were never too sure just how much power we were getting out. Anyhow, 275 watts input on AM equates to about 600 watts PEP output on SSB and a glance at the capacitors used indicates this would be a fairly



The famous Johnson Matchbox ATU.

conservative estimate. The circuit was simple as can be seen but even an experienced home brewer would be hard pressed to duplicate it. The problem for our constructor is the dual differential output capacitor. This was made especially for the Matchbox by Johnson and consists of two split stator capacitors mounted one above the other with a common rotor. Each section had a capacity of 100 pF.

With the balanced feeders connected to each rotor, the capacitor effectively provided a capacitive impedance divider. The actual tuned circuit was a normal parallel-tuned bandswitched inductance with a link coupling coil in the centre. The split stator tuning capacitor was 100pF per section.

The link coupling was unusual in that it provided for 50 ohm input from the transmitter and 50 to 300 ohm output to a receiver. This was of course in the days before transceivers and many receivers had a 300 ohm input. Even an antenna change over relay is included although it is now shorted out for use with a transceiver. The matching specification is 50 to 1200 ohms for balanced lines and 50 to 2000 ohms for unbalanced lines.

In practice I find that it doesn't have quite the range of Matching the "Z" Match has, but of course, handles 400 watts PEP, which the "Rononymous" "Z" won't. In addition it proves that technology of the 1950s is still very usable in the 1990s. I hope to be using my Matchbox for many years yet and if you see one come up in Hamads, grab it quickly, you won't be sorry. By the way, it won't be mine!

More on Small Transmitting Loops.

The inimitable Lloyd Butler VK5BR came up with a few calculations on the loop described in this column a few months ago. Over to Lloyd.

I note your sample of the Small Transmitting Loop in Random Radiators July issue. With the design information from Ted Hart and the benefit of my own practical experience, I believe I can reliably predict how it can be expected to perform. You might like to add the following information to your Random Radiators column so that readers have an idea what they can expect and not expect.

Using the dimensions given, the maximum possible serial efficiency (ignoring tuning capacitor loss) is as follows:

7	MHz	5.6%
10	MHz	17%
14	MHz	42%
21	MHz	73%
28	MHz	89% (If tunable)

With these efficiencies, performance can well be expected to be as good at 21 and 28MHz as a full size wire antenna. (Resonance at 28MHz should be possible but you will only need 3 or 4 pF of tuning capacitor

WOMEN IN RADIO

DOROTHY BISHOP VK2DDB
153A GALSTON RD
HORNSBY HEIGHTS
AND

CHRISTINE TAYLOR VK5CTY
16 FAIRMONT AV
BLACK FOREST 5035

IN THE EARLY DAYS of amateur radio the "little woman" seldom ventured into the hallowed domain of the radio shack unless she was the bearer of refreshments, or wished to assure herself that the occupant was still in the land of the living.

If she made it safely to the workbench she would be told: "Look dear, you wouldn't understand. Be careful of this! Watch out for that! By the way, dear, what's for dinner tonight?" So she would retire meekly to her housewifely duties once again.

It is no longer like that in every amateur household, as a poem by Joy VK2EBX says:

I LIKE AMATEUR RADIO

I like amateur radio, I really think it's fine

That I'll still be a "YL", if I live to ninety-nine.

I like amateur radio and getting on the air,

Making friends around the world and contacts everywhere.

*You can talk to Lapps in Lapland,
Nepalese in Kathmandu,
Malays in Kuala Lumpur, or Peruvians in Peru.*

*You can talk to dukes and dustmen,
or communicate in Morse,
Experiment with ATV and RTTY of course.*

*Put together bits and pieces, though at first the prospect balks,
A diode here a condenser there, and —
listen to that — it talks.*

*Experiment with aerials, it looks real good on paper,
But getting that lot in the air is quite another caper.*

You can enter in a contest, gather



Austine VK3YL

*points for an award,
Join a DX net, or "ragchew"; one
thing's sure, you're never bored.*

*Yes I like amateur radio, and all the
friendly sounds,
Removed from all the trouble and
strife with which this world abounds.*

*It's a satisfying hobby, it will certainly
do me,
'Til they write beside my name the
words "Became a silent key".*

The first Australian lady to obtain her amateur licence was Florence McKenzie whose name is commemorated by the trophy awarded (most years) to a YL Novice Morse operator in the ALARA Contest.

It is a Morse competition, because this mode was that used by Florence McKenzie who held the calls OA2GA, VK2FV and VK2GR at different times from 1926 until her death in 1982.

Mrs McKenzie held a degree in electri-

cal engineering, ran an electrical shop in Sydney and was one of the founders of *Wireless World* which later became *Electronics Australia*. She also taught Morse Code to 50 girls in 1939 who, with her, went on to teach both men and women the code, in the Navy and the Air Force. Many of these girls became foundation members of the WREns and the WAAFs.

Two other early lady amateurs were Elizabeth VK3HM and Austine VK3YL. Elizabeth took up the hobby after helping her son Allen VK3HL to get his licence. She has the reputation of having exchanged greetings with at least one station on each continent on Christmas Eve 1929 — thereby, in one day, qualifying for her Worked All Continents Award!

Austine's interest started when, as a child, she was given a crystal set which she immediately pulled apart — to find out how it worked! She was the first woman admitted to the RAAF Radio Reserve and can still be heard keeping skeds and Morsing around on the bands.

Queensland had some early amateurs, too, with Dorothy VK4DH who passed her exam in November 1929 and obtained her licence in February 1930 (thank goodness we don't have to wait that long these days!). There was Ida VK4JH in 1933 and Madeline VK4YL who, at 12 years old, was the youngest amateur in the British Empire.

Betty VK5YL was the first SA YL, but a Miss Rogers, in 1919, had applied to join that Division to be told, "At present, this Institute is unable to admit lady members." The current holder of VK5YL Denise is one of the YLs featured on the front cover of this issue. She has held an amateur licence for over 35 years.

In WA and Tasmania, the first lady amateurs took the YL suffix too. I wonder why?

They were Ruth VK6YL and Joy VK7YL. Ruth obtained her licence before WW2 but, like all the other amateurs, she had to close down her station when the war came. She joined the RAAF and was on watch when Darwin was bombed, so she was one of the first people to know about the bombing.

Joy VK7YL joined a class to study for

her licence as the only girl with 15 boys. She not only passed that exam but also completed her final year at Teacher's College at the same time. She built her own receiver and transmitter, and with the assistance of her family — and the instructor from the Radio Class — erected her own mast.

She and Jack VK7JB, that instructor, subsequently married in the 1940s.

ALARA - THE BEGINNING

by Joy VK2EBX

Some ladies met and said "You know it really is a bore,

To be stuck with kids and washing-up and every kind of chore.

Being wives of amateurs is really not so good

When they are working radio while we're preparing food!

We can't beat 'em, so let's join 'em, get some action of our own,

And a group of us together can do more than one alone."

So they formed a ladies' amateur group, and soon the OMs knew

They had competition on the air as ALARA grew and grew!

Now things are very different, as all will soon agree,

And the YL role has changed a lot since ALARA came to be;

So while YLs work the radio at all the social "do's"

The OMs are baby-sitting while they tend the barbecues.

ALARA — A Brief History

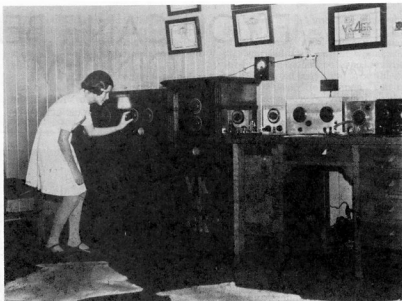
The idea for an organization of lady amateurs and other interested YLs was conceived in 1975 by Norma VK3AYL who had often found herself the odd one out at radio gatherings. When she talked to other women she found they shared this experience, so they formed their own group. It started out as LARA on 26 July 1975 with about 20 members who elected Norma their President. The name was changed to ALARA in 1978 and currently has 230 financial members.

Over the years mention of the group has appeared in many local and national newspapers and magazines, and members have been interviewed on radio and television.

The 1983 article in *New Idea* featuring Mavis VK3KS, Kim VK3CYL and Margaret VK3DML resulted in 40 letters to the then secretary Jenny VK5ANW, who later became President of the VK5 Division in 1986, following in the steps of Susan VK2BSB who was made President of the VK2 Division in 1982. Another member, Christine VK6ZLZ, became President of the VK6 Division in 1988.

ALARA — Today

As well as being represented at many gatherings of "hams", ALARA members



Madeline VK4YL at the controls of VK4GK/YL

hold their own triennial ALARAMEET, to which YLs and their OMs come from all over Australia and from New Zealand. The first of these was in Mildura in 1984, then Adelaide 1987 and Dubbo 1990. The next one in 1993 will be in Castlemaine.

Recently Dorothy VK2DDB has been publicising ALARA with a series of talks to some of the VK2 Clubs. Dorothy is the VK2 ALARA representative.

She compiled most of the material in this article, some of it from material supplied by one of the older amateurs. If anyone has any relevant information we would appreciate hearing from them.

Each State has a State Rep; and if any Radio Club would like a speaker from ALARA, the WIA Divisions have contact information.

The State Reps can also help any interested lady who would like to either become an amateur herself or just join ALARA.

ALARA has an attractive Award for contacting a number of ALARA members, the details of which are published regularly. This is open to all amateurs and SWLs.

ALARA runs the ALARA Contest each November, details of which were published in the October issue. Both YLs and OMs are welcome to participate with certificates issued for the top scorers in a number of categories.

There is also a sponsorship scheme whereby overseas YLs can become members of ALARA, often sponsoring the Australian YL into their own group. So, in Australia we have members of BYLARA (UK), CLARA (Canada), YLRL (USA), WARO (New Zealand), and JARL (Japan). Many of these organisations have Contests and Conventions and Awards

in which some VK members have participated.

These days there are many more parts for a woman to play in radio than ever before, if she wants to be more than a provider of refreshments. **ar**

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*Cabling diagram provided to connect a key (not supplied) through serial port 1.

The WIA regrets that the wrong Goodhand advertisement went in the October 1991 issue of Amateur Radio.

"IF YOU CAN'T BEAT 'EM JOIN 'EM"

CHRISTINE RUSSELL VK3LCR
21 CLENDON RD, FERNTREE GULLY 3156

WELL, I FINALLY DECIDED to take the plunge! Study for (and get!!) my Novice Licence. The first step on the road to an unrestricted licence, which will give me the freedom to talk to anyone on the air, anywhere in the world. I had always wanted to do this, but had never got around to it.

I decided this before Christmas last year so I was looking forward to the Novice Classes all the holidays.

The first couple of weeks of the course seemed fairly easy to understand. Electron Theory. I thought "I can cope with this, no problems!" Then we had a small revision test. I didn't pass. Ouch! So much for being confident. I headed for the study notes.

Then came the subject of Resistors and Ohm's Law and, unfortunately, maths came along with it. I consider myself to be reasonably intelligent after having a reasonable high school education (a few years ago now), so when I was faced with the formulas I got a shock when I did not breeze through as easily as I had thought.

Do not get the wrong idea! This course was not hard, but I found it a bit difficult coming back to study after more than 10 years. I came to the conclusion that I had to apply myself to doing more than just an hour of study before I left for the weekly class.

We are talking serious study here!! At least two to three hours a week. Where was I going to find the time with three young children, a husband, and a part time job? Well, if you really want to achieve something you will find the time. Right? Right!

As I went along to the course, week after week, I came across names and



Chris VK3LCR pictured with OM Dale
(not yet converted to amateur radio).

phrases I had never heard of before. And I seemed to be the only one in the class who hadn't.

"What's a multi-meter?" I asked. "The multi-meter is used for measuring voltages" was the reply. "Ah," I nodded, none the wiser.

We were using schematic diagrams and I could not work out how you could measure the voltage. I had lots of questions, but was reluctant to ask many of them as I did not want to show my total ignorance.

Fortunately, as I went along, I discovered a couple of easy ways to remember formulas. $xL = 2\pi FL$ transposed into $xL = \frac{2\pi F}{L}$ "Two pies For Lunch", and the Ohms Law triangle transposed into E for Eagle which is over the I for Indian + the R for Rabbit. Therefore $I = \frac{E}{R}$ etc. Not very technical, but at least easy to remember.

Halfway through the six-month theory course I was encouraged to sit for the Regulations exam, rather than sit all the exams at the same time. I passed! Wow! One down, three to go!

When we came to capacitors I had great trouble trying to work out how you picked this thing up. Once again we were learning this using schematic diagrams and, for the life of me I could not understand how you picked up two metal plates with air in between them. But when I actually saw a real capacitor, "Of course, I always knew it looked like that!"

By now the lecturer was giving me some strange looks, obviously thinking I have lived a very sheltered life, but I pressed on. Lots more study required.

AC Theory — "Excuse me," I said apologetically, "Could you run through that one more time please?" (the third time by now!). This was the hardest lesson to understand so far. By now my brain was in panic mode. The more the lecturer said, the less I took in and the more I panicked. How was I ever going to get my licence? And I thought I could pass Morse at the same time! !

This was the fork in the road! I had come so far and, apart from a couple of hiccups, I had thought I was doing fine. But AC Theory!!

A couple of days after that class I calmed down, and decided that I still really wanted to go for this amateur radio licence and resolved yet again that I was going to have to do even more study. I also decided to keep studying the same subject until I understood it, even if it meant I was a couple of weeks behind in class. Now this may or may not be a good idea, but it kept me going.

By now of course I realised that some of the others in the class were not breezing through this easily either. But so what! I kept telling myself "No-one told me it was going to be easy. Nothing really worth achieving is ever 'easy'." I just was not used to study, and neither were some of the others.

I was much braver now, and as soon as the lecturer mentioned in passing a term I had not heard before I quickly enquired as to what he was actually talking about. It's amazing how many words can mean the same thing! What is linear? What is oscillation? These terms were being used in passing and I had to understand what they meant or I would be behind.

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I work in the Federal Executive office of the WIA, and fortunately Brenda Edmonds VK3KT, Graham Thornton VK3IY and Bill Roper VK3ARZ were on hand, expertly and patiently to explain the dark mysteries of amateur radio theory to me when my brain started to fog up. At least the Block Diagrams were easy to understand.

One never-to-be-forgotten evening, not knowing what it stood for, I asked "How do you spell CROW?" EVERYONE in the room turned to me and said CRO! I just grinned. They were used to me by now. The instructor asked generally, while looking at me, "I assume everyone has seen a Cathode Ray Oscilloscope?" Everyone nodded, while I shook my head! He shook his head disbelieving yet, by now, prepared to believe anything about me.

Next we did Receivers and Microphones. Suddenly something clicked. I understood what we were talking about. All the hard slog was paying off. "See, I told you the rest was easy," we were told by the instructor. I now enjoyed learning about amateur radio more because the light was dawning faster than it had before.

One night we saw some videos explaining about the common emitter, common base, and common collector. Now if only I could get a hold of these and replay and replay, that would save a lot of reading!!

The countdown was on. Only four weeks left until the exams. Twenty-seven optimists started the course and now only 10 were left — would I be next to go? No way!!

I had now decided to go for broke — plunge in at the deep end and learn Morse too. I was too impatient to wait until the next exams were held before receiving my licence. Now I was listening to Morse tapes for about half an hour each night, while peeling the potatoes and doing the dishes. My husband was not overly thrilled about this. To be quite frank, it drove him nuts, and he left the room whenever I played the tapes. Consequently, to preserve family harmony, I continued my studies in the sewing room.

I had now virtually stopped watching TV, with less than two weeks left before "E" day. Fortunately our last class session was on Revision. I was desperately hoping for some last-minute tips. Whew! A two-day tutorial in two and a half hours, my brain was spinning. It's now or never — I was doing two hours study a day, including Morse.

The last weekend before the exam, I went to my father for some help at my first attempt at Morse sending, and some receiving practice on the computer. "Flick your wrist," I was told. "Use your wrist". Try, try and try again. It seemed hopeless.

I spent some time receiving what I thought was 5wpm Morse. But I was making the allowable 10 mistakes and I was worried. Dad said he would reduce the speed on the computer so I could keep up. I protested that I had to be able to do 5wpm to pass! He grinned "You have been doing nearly 7wpm!" He had tricked me but my hopes had risen again — maybe I was in with a chance after all.

Well, exams night arrived! Boy, was I nervous, and I was not the only one, either. The room had quite a few shaky hands in it before the Morse exams started. I was first in for sending, and glad to get it over with. I was fairly confident with my theory knowledge, but there could always be questions on some things which I had overlooked.

Two weeks later the long-awaited letter from the WIA Amateur Division arrived. I PASSED!!! The euphoria and elation were unreal. I was on a high with incredible feelings of success and achievement. Wow!!! did I!!

Piece of cake really!! I kidded myself. I am now the proud holder of callign VK3LCR. (Easily remembered as "Lovely Chris Russell" — Ed). I also discovered that after more than 10 years away from books, I was in danger of becoming hooked on study.

Look out AOCP! Here I come!

ar

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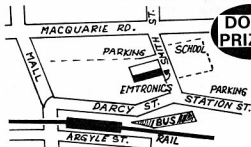
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The DXCC and You

A letter to my predecessor from Stephen Pall VK2PS has triggered off a few thoughts on this topic.

In his letter, Stephen points out that when DXCC is mentioned, operators straight away think of the ARRL award, but he feels the WIA DXCC deserves a higher profile and some distinction.

I personally think the WIA DXCC already holds some distinction, and am proud to say I hold certificate No 231, which satisfies my own requirements admirably.

As a member of the WIA, the certificate was issued free of charge, in itself a boon to VK DX operators.

It saves the necessity of parcelling up 100 plus QSL cards, and paying return postage, and the ARRL fees for the award, and the long, long wait involved.

Some may disagree, but I think the two awards (WIA and ARRL) are on a par for distinction.

As for QSL card verifications, we enjoy the scrutiny of not only myself, but my assistant and the DXCC co-ordinator, Steve VK3OT. I can personally verify that if an application does not reach the standard required, the applicant is notified of any shortcomings, and the application held in abeyance until any corrections are made and the required standard reached.

So you can see that all the necessary protocols are observed to make ours as good as theirs, and fully appropriate to the amount of work, expertise and long hours necessary to obtain this prestigious award. So, if you qualify for DXCC, don't hesitate to apply to the WIA for yours.

CQ Magazine Awards

I have had numerous enquiries regarding these awards. To satisfy those who need the WAZ and others covered by CQ magazine, Bill Vogel VK5NVW is an authorised checkpoint for these awards. He can supply rules, application forms and check cards.

So, to save the necessity of sending your valuable cards overseas and incurring, for some, an unnecessary expense, send your award information to: Bill Vogel, 16 Wandilla St, Largs North 5016, accompanied by adequate return postage.

Swedish Radio Society (SSA) Official Diploma Program

Worked All Sweden Award — WASA
Heard all Sweden Award — HASA

Swedish Locator Award — SLA

Field Award

Note: The WASM and WASM II diplomas are hereby cancelled.

For each award a record books is available (rules, record sheets, application form, index, maps etc).

1. Worked all Sweden Award — WASA

WASA will be issued to licensed radio amateurs for verified contacts with Swedish counties (län) and callsign districts made after 1 January 1988.

Swedish applicants shall be members of SSA, and overseas applicants shall be members of their own country's IARU affiliated radio society.

All contacts shall have been made from the same QTH and/or within a radius of 150km from that QTH.

Each individual contact shall be made with the same band and mode.

The same station may be contacted on several different bands.

All contacts shall be made with land-based stations.

Contact with earth-based repeaters is not permitted.

Separate diplomas will be issued for HF, 144MHz, 432MHz, 1296MHz and satellites. For HF — 1.8, 3.5, 7, 10, 14, 18, 21, 24 and 28MHz are counted as separate bands.

Within every group, separate diplomas can also be issued for the different classes.

Stickers can be granted for 2x CW, 2x Phone, 2x SSB and 2x RTTY.

All contacts shall be verified with QSL cards or equivalent, on which there is sufficient information to accurately determine the län/callsign district worked.

Applications shall consist of QSL cards, and a list of these with the län/callsign districts in alphabetical/numerical order.

Instead of sending in QSL cards, overseas applicants may get their cards checked by the diploma managers in their own countries, if such a person exists (GCR list).

The fee for the diploma is SEK 30, ASD 5, USD 5, DM 10 or 10 IRC.

Applications should be addressed to: WASA Diploma Manager, SSA, Östmarksgatan 43, S-123 42 Farsta, Sweden.

Requirements: WASA-HF

Class 3	Applicants in Europe All callsign districts (0,1,2,3,4,5,6,7)
Class 2	All län
Class 1	All län on 2 bands
Shield	All län on 5 bands
Class 3	Applicants outside Europe All län on 2 bands

Class 2	All län on 3 bands
Class 1	All län on 4 bands
Shield	All län on 5 bands

WASA — 144MHz	
Class 2	All callsign districts
Class 1	All län
Shield	5 different stations in each län
WASA — 432MHz	
Class 2	All callsign districts
Class 1	All län
Shield	3 different stations in each län
WASA — 1296MHz	
Class 1	All callsign districts
Shield	All län
WASA — Satellite	
Class 2	All callsign districts
Class 1	All län
Shield	All län in 2 modes each

2. Heard all Sweden Award — HASA

HASA will be issued by SSA to all short-wave listeners (SWLs) for verified reports of stations in Swedish län and callsign districts for contacts made as from 1 January 1988. The diploma is issued in classes and groups corresponding to the rules for the Worked all Sweden Award (WASA). No shields will, however, be issued.

3. Swedish Locator Award — SLA

The SLA is issued by SSA to licensed radio amateurs for verified contacts made with the various locator squares in Sweden, as defined by the Maidenhead system, for contacts made as from 1 January 1988.

The diploma is also issued to SWLs on the equivalent basis.

Swedish applicants shall be members of SSA, and overseas applicants shall be members of their own country's IARU affiliated radio society.

Contacts with earth-based repeaters are not permitted.

All permitted amateur radio bands may be used.

Requirements:	
Basic diploma	25 squares
Sticker	35 squares
Sticker	45 squares
Sticker	55 squares
Sticker	60 squares
Sticker	All squares (64)

Endorsements can be obtained for individual bands and modes.

QSL cards shall have been received but do not need to be sent in. Applications shall be made by means of a GCR list, verified by the applicant's national award manager.

The fee for the basic diploma is SEK 30, USD 5 or 10 IRC and SEK 5, USD 1, two IRC for each separate sticker application.

Applications should be sent to: SLA Diploma Manager, SSA, Östmarksgatan 43, S-123 42 Farsta, Sweden.

Field Award

The SSA will issue the Field Award to licensed radio amateurs and shortwave listeners for verified contacts with fields, as defined by the locator system adopted as from 1 January 1985 (Maidenhead Locator). Contacts on or later than this date are valid for the award. The Field Award is issued in six different classes:

Bronze	basic	100 fields
Silver	sticker	150 fields
Gold	sticker	200 fields
Platinum	sticker	250 fields
Shield		300 fields
Shield, gold plate		324 fields

All amateur radio bands and modes are permitted. Endorsements will not be issued.

All contacts shall be made with stations on the surface of the earth.

Contacts shall be verified by QSL cards or equivalent, on which the field or position is clearly stated with such accuracy that the field can be determined. The term "position" refers to latitude and longitude or to a place name.

If there is any uncertainty about a field, SSA may demand further information before approving the contact. If the uncertainty remains, then the contact will not be approved.

A random sample of individual QSL cards will be made, which must be sent in for checking.

The application shall be made on a GCR list containing the information from each QSL card which is required for approval. The GCR list shall be verified by the applicant's national awards manager or other official in the applicant's national amateur radio society.

The fee is SEK 30, USD 4 of 10 IRC for each class.

Manager, SSA, Östmarksgatan 43, S-123 42 Farsta, Sweden.

Panama International Award

by the Panamanian Amateur Radio League. The award is available to all licensed radio amateurs following the rules.

1. The award will be issued to amateurs who received QSL cards from HP stations, at least one from each of the nine different call areas (1,2,3,4,5,6,7,8 and 9) on any band and mode.
2. Up to three call areas may be substituted with any of the official club stations for ex HP1LR to HP9LR.
3. Valid contacts after 1 January 1978.
4. Applicants must send a copy of the log or list of the stations worked to: LPRA-HP Bureau, PO Box 175, Panama 9A.
5. If you are not a member of the radio club, you will have to send the QSL cards, which will be returned.
6. The fee for the Panama International award is \$US3.00 in the form of an interna-

tional money order or equivalent in IRCs (IRC = 0.50) to be sent to "Liga Panameña de Radioaficionados Nacional". **ar**

WIA Awards Program

General Rules

Cost: Free to all WIA members, VK non-members pay \$A5.00 and others \$US5.00 or eight IRCs.

Verifications: Applicants need to hold QSL cards for QSOs claimed; however, do not send QSL cards with your application. A list of all contacts is needed, which should list the following information: Date, time, call sign of station contacted, frequency, mode. Contacts should be listed in order of callsigns. At the bottom of this list should be a declaration signed by an official of a recognised society or by two licensed amateurs, reading as follows: "I/we certify that (insert name and call sign of applicant) holds QSL cards corresponding to the above list and that I/we have personally inspected these cards." Signatories to the declaration should clearly indicate their names and callsigns.

Applications

Applicants should state whether they are WIA members and, if so, list their membership number. Where relevant, changes in call sign and dates of such changes should be indicated.

All contacts for any particular award should be made from the same call area.

Crossband contacts are not eligible, nor are those made through terrestrial repeaters from aircraft or to or from sea-going vessels.

Where a fee is payable this should be sent with the application.

In cases of dispute the decision of the Federal Awards Manager and two officers of the Federal Executive on the interpretation of these rules shall be final and binding.

Applications should be sent to: Federal Awards Manager, Wireless Institute of Australia, c/- PO Box 300, South Caulfield, Victoria 3162, Australia.

Awards Available

WIA DXCC Award: This award is available to all amateurs who submit evidence of having worked 100 countries, and can be endorsed for various bands and modes. Acceptable countries are those that are acceptable for ARRL DXCC (I will print an up-to-date country list soon), with the WIA reserving the right to make different decisions in regard to additions and deletions.

Having obtained the DXCC award, holders may register subsequent claims for higher totals, and these will be published from time to time in *Amateur Radio* magazine in the form of a ladder. No stickers to indicate these higher levels on certificates are available (I'm working on this one). Applications for higher totals should be made in multiples of 25 up to

a total of 200 (ie 125, 150, 175, 200) and thereafter in multiples of 10 up to a total of 300. After 300, applications will be processed in one country steps or as required.

Should a country be deleted from the DXCC list, credit for that country will be allowed if worked before the date of deletion. The DXCC ladder will show the member's tally of current countries and total of current plus deleted countries, eg 200/220 — meaning 200 current countries and an extra 20 that have been deleted at some time, but were worked before the date of deletion.

All claimed QSOs must be made from the same DXCC country.

General rules apply.

Worked All VK Call Areas: Known as "WAVKCA" this colourful (now A4 sized) certificate is the WIA's most popular award. There are separate requirements for local and overseas amateurs.

VK Applicants require 77 QSOs as follows: VK0 — three contacts from at least two different areas; VK1 — three contacts on at least two different bands; VK2, 3, 4, 5, 6 and 7 — 10 contacts from each call area on at least three different bands; VK8 — three contacts on at least two different bands; VK9 — four contacts from at least three different areas.

General rules apply except Australian applicants need not hold QSL cards. No repeat contacts made after 14 February, 1990 will count.

DX Applicants (non VK) require 22 QSOs as follows: VK0, 1 — one contact from each call area; VK2, 3, 4, 5, 6 and 7 — three contacts from each call area; VK8, 9 — one contact from each call area.

Contacts must be after 1 January 1946.

General rules apply.

Heard All VK Call Areas: This is a "heard only" version of WAVKCA award, available to SWLs on the same basis as to amateurs; the same fees and procedures apply. General rules apply.

Worked all VK Areas (VHF) Award: Requires 22 QSOs on VHF bands (50MHz and above) as follows: VK0, 1 — one contact each; VK2, 3, 4, 5, 6 and 7 — three contacts from each; VK8, 9 — one contact each.

Contacts must have been made after 1 January 1958. If the applicant moves to a new location and the new location exceeds a distance of 240km from the old, a new application will be necessary for the new QTH. General rules apply.

Worked all States (VHF) Award: Requires eight QSOs on VHF bands (50MHz and above) as follows: One contact each with each State and Territory of Australia as listed: VK1 — Australian Capital Territory; VK2 — New South Wales; VK3 — Victoria; VK4 — Queensland; VK5 — South Australia; VK6 —

ARRL WAS MAP



American Radio Relay League, Newington, Connecticut, USA 06111

JT-80 Anniversary Contest

00.00Z Saturday to 00.00Z Sunday 21-22 December 1991.

This contest is organised by the Mongolian Radio Sports Federation on the occasion of the 80th anniversary of the National Liberation Movement of Mongols.

Classes: Amateurs should participate in only one mode (CW or phone). A. Single operator multi bands. B. Multi operator multi bands single TX. C. SWLs.

Exchange: For JT, RST plus last two digits of year first licensed. For foreign, RST plus a three-figure QSO number starting with 001.

Scoring: Five points for contact with a Mongolian station. Three points for contact with other continent. One point for contact with own continent.

Multipplier: DXCC countries plus each JT station on each band.

Bands: 1.8-28MHz (not WARC).

Final Score: Total QSO points from all bands times the sum of the multipliers from each band.

Awards: Gold, silver, bronze trophies to the first three places of each class. Amateurs making more than 80 contacts will receive awards.

Submit separate logs for each band, including a summary sheet showing the scoring, transmitter power and other essential information. The usual signed declaration is also requested.

Logs must be received no later than two months after the end of the contest by: JT-80 Contest Commission, PO Box 639, Ulaanbaatar-13, Mongolia, Asia.

1991 Australasian Sprint Results

Entries for the sixth series of Australasian Sprints totalled 14 in the CW section (up by one from 1990) and 25 in the Phone Section (down by eight). Of these, four and 10 respectively had entered last year's contests, indicating significant changes in entrants—some very familiar call signs were missing. It is interesting that there were approximately 38 operators in the CW Section and 100 in the Phone Section who participated in the contests but did not submit logs. I wonder why? Some of these appeared to have had quite good scores and may well have qualified for awards.

The scores in both sections were appreciably higher than those of last year due to the mostly good conditions on the two nights and to the relatively high number of operators on air. Comments received, especially those from first-time entrants, suggest that a good time was had by all and that the format of the contests is appreciated.

The Adelaide Hills Amateur Radio Society and the South Australian Division of the WIA congratulate the overall winner and also the

Western Australia; VK7—Tasmania; VK8—Northern Territory.

General rules apply.

Australian VHF Century Club Award:

Requires 100 QSOs on VHF bands (50MHz and above) as follows: 100 contacts with 100 different stations, at least 70 of which must be Australian. Separate awards will be issued for each different VHF/UHF band. Contacts must be on or after 1 June 1948. If the applicant moves to a new location and the new location exceeds a distance of 240km from the old, a new application will be necessary for the new QTH.

General rules apply.

WIA Antarctic Award: Applicants need to make 10 confirmed contacts with amateur stations conducting valid operations from Antarctica. The 10 must include stations licensed by at least six different government authorities, and at least one must be a VK0.

Antarctica is defined as the land mass, including islands and permanent ice shelf below 60 degrees south latitude. (This excludes Heard and Macquarie Islands. These are sub-antarctic.

Contacts only on or after 23 February 1988 are valid for this award.

General rules apply.

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CONTESTS

(INFORMATION PROVIDED BY RELEVANT CONTEST MANAGERS)

Contest Calendar

November

8-10 Japan International DX Contest
9-10 European DX Contest RTTY
23-24 CQ WW DX CW Contest

December

7-8 ARRL 160m CW Contest
14-15 ARRL 10m CW and Phone Contest
21-Jan 18 Ross Hull (subject to confirmation)

February

7-8 Commonwealth Contest

March

21-22 John Moyle FD Contest (subject to confirmation)

winners in the individual call areas. Winner? Yes, that man has done it again. Another great effort by Roger Crofts VK4YB to record the highest score in both sections, as he did in 1990.

There were several highlights in this year's contest, not least of which was the entry of Lloyd VK2VZB in the CW section. This is, I believe, the first instance of such an entry by a Novice in the six years the Sprints have been run and hopefully it will lead to more next year — well done, Lloyd.

Conrad Romberg VK5CR, visiting Adelaide from his home in Dallas, Texas (home call sign N5CR) brought an FT107 and trap vertical antenna with him and, despite operating under some difficulties from his hotel, managed to make the highest score by a VK5 operator in the CW section.

Laurie Jenkinson VK3NTV, XYL of Steve VK3YH who is a previous outright winner and state winner in the Phone section, managed to grab the microphone first this year and won the certificate for highest scoring VK3 operator to add to their collection — should be quite a "contest" next year.

The hard luck story is that of Jo Dudley VK4JO who, until one day before the cut-off date for entries, had the leading score in the Phone section. Jo, who was equal runner up in 1990, was beaten this year by just one point.

Lists of the logs submitted together with the points claimed (or, in some cases, allowed) are shown below. Certificate winners are indicated by asterisks.

CW Sprint			VK1FV	23
ZL1GQ	19	*	VK2AVI	36
			VK2AIC	26
			VK2CKW	21
VK2NW	23	*	VK3NTV	58
VK2PS	22	*	VK3CYL	53
VK2AIC	18	*	VK3DD	25
VK2VZB	10	*		
VK38U	23	*	VK4YB	70
VK3DG	18	*	VK4JO	69
VK4YB	37	**	VK5KXC	60
VK4TT	21	*	VK5KYM	55
VK4BL	13	*	VK5N07P	52
			VK5AFO	51
VK5CR	14	*	VK5KAM	42
VK5MNP	10	*	VK5RV	38
VK5AGX	8	*	VK5CJP	32
			VK5VC	31
VK7FN	22	*	VK5TY	30
			VK5ZD	22
			VK5OV	24
Phone Sprint				
ZL18VK	57	*	VK6LL	51
ZL1GQ	48	*	VK6BGF	24
VK1PJ	54	*	VK140018	28

Some Operator Comments: CW Sprint

ZL1GQ: Enjoyed the Sprint. Lots of VK signals for 40 minutes and then none — a quick change in conditions?

VK7FN: An enjoyable hour, plenty of ZLs up late.

VK2VZB: Congratulations to AHARS for running the Sprints. Suggest running perhaps four contests a year with some restricted to hand keys only. A little disappointed at the operating practices of a few operators.

VK4BIL: Good fun as usual and band conditions quite reasonable. The time for these short bursts is about right. I still find CW the most interesting and challenging.

VK3BKU: At the end of the hour felt sorry to stop as there were other stations yet to be worked. Short contests are a great way for new operators to gain experience. The period in which the Sprint coincided with the NZART Memorial Contest would have enlivened things for ZL operators.

Phone Sprint

VK2CKW: Enjoyed the action. Good fun.

VK3CYL: Entered for the first time and enjoyed the sprint very much. Hope to enter again next year and perhaps improve my score.

VK3NTV: Thanks for the contest, which was my first ever and was a great adrenalin boost.

VK4JO: As usual enjoyed the contest immensely.

VK6BGF: Not an outstanding tally, but at least an entry. Band conditions were not outstanding.

ZL1GQ: A really good show. The most and best VK signals on 80m for a long time. A very enjoyable hour's activity.

VK5KXC: Entered for first time and really enjoyed it. Could there be more one-hour sprints, perhaps on VHF/UHF?

VK5RV: A very enjoyable contest and the hour went quickly. Surprised at the good response from distant stations to my 15w.

VK5NOT: Operated portable from a national park with eight Watts and battery power. Thanks for the contest; looking forward to next year.

VK5KYM: Entered for the first time but not the last. Operated portable from the Coorong using emergency power. Very pleased with results — similar number of contacts to those obtained over 24 hours on multiple bands in John Moyle Field Day.

VK5AFO: Enjoyed the contest — short, sharp and shiny. Many more stations on this year. Worked more VK6s than usual.

VK5VC: First-ever contest and really enjoyed it. Looking forward to further contests in the future.

VK5ZD: Lots of activity this time. Let's hope that even half of them put in logs.

David Box VK5OV, Australasian Sprints Contest Manager, Adelaide Hills Amateur Radio Society.

1991 RD Contest Results

Neil Penfold VK6NE

VK3 Wins the RD Contest and Trophy

Congratulations to VK3 for its effort in this year's contest.

Despite poor band conditions, log comments gave a picture of a friendly contest with some good scores. The summary sheet only requirement was well received by operators (and my postman).

My thanks to all who participated, even if they didn't send in an entry.

Some checks have been done and it seems that about twice as many operators participated as sent in entries.

I acknowledge the work of the members of VK6ANC in compiling the scores and producing the results. Their work certainly eases the contest workload.

Comments have been included and paint a better picture than any write-up I could have done. See you all again next contest — VK6NE.

Results in numerical order

1st	VK3	1557.29
2nd	6	993.14
3rd	4	615.58
4th	2	570.94
5th	5	527.93
6th	1	297.86
7th	7	297.61
8th	8	17.29

Final score = $\frac{\text{No. Logs}}{\text{No Licences}} \times \text{Total points} \times \text{WF}$

Weighting Factor

VK1	33/412	x	3546	x	1.05	=	297.86
VK2	68/5323	x	6177	x	7.11	=	570.94
VK3	132/5204	x	15770	x	3.95	=	1557.29
VK4	70/5199	x	5710	x	4.17	=	615.58
VK5	72/2073	x	9669	x	1.56	=	527.93
VK6	105/1705	x	11524	x	1.39	=	993.14
VK7	34/651	x	2935	x	1.95	=	297.61
VK8	2/203	x	177	x	9.77	=	17.29

Comments from the RD Logs

After nearly 45 years of RD contesting, I believe the time is coming when the WIA should act to either shorten the operating period or end the contest altogether. Most of the participants these days were too young (if they were even born) to have any deep feeling towards the acts of dedication and sacrifice which this contest recalls. With the widespread use of equipment which does it all, leaving little for the operator to do, where is the stimulation to perpetuate the contest? Competing in state groups for a shield is an idea which may detract from the spirit of remembrance.

Further, 599, or five by nine, must be the bottom limit of unintelligent communication. If the ex-service members of the institute want a real contest, let them exchange service serial number, area of service, period of service etc in message form. It would then be a "remembrance" contest for those survivors who are still active. I think the commencing time of 08 hours should be retained. However, ending time should be either 20 hours UTC, or 2359 hours UTC. Eliminating daytime activity on Sunday after that time would make life easier in families whose interest cannot be very great anyway, and the elder citizens

would avoid the exhaustion natural to their age.

The scores indicate that few of the older generation operate for 24 hours. To them, participation evokes sentiment, to them it is the spirit, not competitiveness, but of remembrance, which motivates them. I therefore ask which is more ennobling, to win or remember with gratitude ... VK4XA.

Enjoyed the contest, though I wasn't as successful as I had hoped. Have you considered allowing other DX contacts beyond ZL and P29 surely on 20, 15 10 there is good interest in the RD and some change to allow wider participation might be a good move ... VK1ST.

Although my score is lower than last year, I enjoyed the friendly contest and will be back again next year; VK2LEE.

I operated 80, 40, 20, 15, 10. There were virtually no stations on 15 or 10 at all, and the number of CW stations was way down on when I last went in the contest eight years or so ago ... VK4OR.

Summary sheet only sure saves a lot of effort! ... VK3ABP.

We made 624 entries in log, less dupes, of course. A larger fraction of these than in previous years was with ZL and P29. In addition, time-out was called to work some rare DX ... Cambodia, Brazil and Mozambique springing to mind. A most notable contact was with ZL2NCC Jeremy, who is 14 years old and only just got his licence ... VK6SZ.

Trust this easier method of entry will ensure lots more participants sending in their scores, as it saves a lot of time rewriting for us old guys who are not computer oriented. Contest as enjoyable as ever, and don't think I've missed one yet since they started. Can't understand why novices who have a great opportunity in the RD contest do not operate more on 10m band, which was open to VK6 most of the day on Sunday and would have been kept busy. Fifteen metres was not so bad, as few novices did well on that band ... VK4LT.

Great contest again this year; good conditions on 80m Saturday night, along with the usual QRM! My wife VK3NTV and I operated the station in tandem most of Saturday night, our first contest together. It was great fun. I almost forgot, a great idea, summary sheet only; saved hours of redoing my untidy contest log. Thanks to all concerned with this move ... VK3YH.

It is a great pity that some operators fail to understand that more often than not band space becomes a premium and so more than likely sometimes two or more stations, and not necessarily from the same location, may be on one frequency, especially when on the novice segments of 80m ... VK2MUZ.

Very pleased to find such a "turn out" on most bands, thus maintaining that necessary interest throughout. DX stations running their own contest on 14MHz in particular helped to

make listening very interesting!!! However, the standard of operating helped to make the challenge very enjoyable. Congratulations to all ... VK5AGX.

Not as many as last year. Same problem as the JM Contest. Are we getting disinterested in the hobby? I think the blame lies with the ease with which we can use 2m to chinwag. We may as well be at the pub. Still think you should allow logging of overseas stations; there were many times I had to ignore or not hear the overseas callers. It's not right. Had a great time as usual ... VK1PJ.

A good contest and pleasing to see participation of P29 and ZL. Unfortunately, my current location in Queensland apparently does not lend itself to scoring as well as my last one in the ACT, but I enjoyed the event immensely, and the climate is so much better here ... VK4DRC.

My first contest, and enjoyed it very much — learning a great deal about operating in general. Restrictions of power/bands of operation imposed by a combined licence are handicaps. I will try, and very hard, to eliminate before next year's contest. The VHF/UHF category was a farce in the Sydney metropolitan area. I made hundreds of calls on 2m and 70cm without any response at all. I also continuously ran scanners on both bands to monitor activity. I heard nothing! ... VK2JIM.

A most enjoyable contest — gave it more of a bash this year than last. There still seems to be fewer of the older call signs around! Very friendly and good fun. It seems "naked" only sending the summary sheet and not the log as well, but should be a lot easier for you to check ... VK3DDX.

Congratulations on the rule changes; trust all works out okay. Have retired 13 years now and still doing a job for WIA ... VK4PJ.

Only on for a short time — not having to rewrite the log is a most appreciated convenience. Hopefully this will increase participation ... VK5ZZK.

I had a great time this year; thanks for your efforts ... VK2DOJ.

General good conditions and, judging by the number of stations heard, you will be inundated with logs! Regards and 73 ... VK6BGF.

This seems to be one of the friendliest, hassle-free RD contests I've had the pleasure of entering. Congratulations to all who made it worthwhile ... VK2IV.

My first time in the contest, and had a great time. "Hi", 73 ... D Lancaster.

As few as they may be, there are some operators who will falsely declare they operated in accordance with the "spirit of the contest"! I am a member of the RSL, 73 ... VK5KV.

My special thanks to VK6NE and helpers; my only disappointment was there were not enough VK6 operators on the air, and most kept to 146.5 and 146.55, causing hold-ups when we have many other recognised simplex

frequencies. Also regret not being able to devote so much time to contest this year.

I object to rule 7. Club stations can have 24 operators during the contest. I worked my station 24 hours on my own. Club stations should compete against each other ... VK6ATZ.

The general operating standard and behaviour were excellent. It saddens me to observe fewer and fewer stations each year operate in the CW section ... VK4CAG.

I was able to join in the latter part of Sunday afternoon and found it a pleasant contest again — after not being available for a year or two ... ZL3TX.

Another enjoyable contest. I could only operate Saturday evening and one hour on Sunday; hope to do better next year. All the best ... VK5MN.

I won't bore you with a long screed this time, but I have to put in my annual appeal for the return of the open section ... VK6ED.

Herewith this year's entry. Not much, I'm afraid. I lost the LF antenna in the gale and couldn't work below 14MHz; but I guess every little helps ... VK6AJ.

The standard of operation by competing stations this year was an improvement over last year. The only criticism I do have concerned a couple of stations on VHF which at times were lax in using their full call sign but, after a little prompting, this was cured. A particular note from our station officer Keith Turner VK3CWT, who was quite surprised at the number of stations on VHF which wished each other all the best in their efforts this year and hoping to do it all again next year, nice to see.

This year was the first time this club was able to use a computer for logging in this contest and we certainly found it a lot easier than with pencil and paper. Our computer investment has paid dividends already. We were using Geoff Hudson VK3VR's program, and it worked very well indeed. When you release this year's results, may I suggest you encourage the development of programs for this contest, as I am sure there are some people out there who can come up with some good ideas. Computers, I feel, will return some vigour into this contest and encourage some younger operators. The rules for the contest would have to be made available a little earlier to allow time for writing these programs. I know from personal experience that we managed to get some younger operators only due to the computer ... VK3AFC.

The number and variety of contacts were determined by the antenna and low power of my station. It was pleasing to see the increase of YL operators and the participation of Girl Guide and Scout groups, mainly from VK6. It was also interesting to discover enterprising "novices" on the novice band to appear in the shadow of full-call friends, with the full call alerting the opposite station to listen for a weaker novice call. (It was not a net operation) ... VK2PS.

A great way to celebrate my return to my native VK2 after 38 years in VK1. A most enjoyable contest, not without its humorous moments. The UA operator who would not be put off until he obtained his contest number (from me, and two before me). The VK who complained bitterly that I had stolen his frequency, explaining he had gone only temporarily for a coffee break and always intended coming back. The VK4 who confided he was giving out only a few numbers and mine was 59A?? Still, a lot of fun and congratulations to the organisers ... VK2ARJ (ex-VK1RJ, P29RJ, VK9RY).

Once again enjoyed the contest though there did not appear to be as many contestants around as in other years. Hope the decision not to submit logs doesn't lead to the lowering of the prestige of the RD, and a watering down of the particular significance of the day ... VK4BA.

Enjoyed taking part in the contest and I appreciate the time you spend in making this annual event enjoyable and worthwhile ... VK4CF.

What a great contest! Next year I'll be doing a much longer stint. It was great to hear so many VK stations on 20m all at one time — and all calling me. It was the best pile-up I've ever had. Thanks for your hard work ... VK6VZ.

VK1		VHF CW	
Points	Logs		
HF Phone 2796	16	VK1DF	12
VHF CW 77	3	VK1RH	11
HF Phone 630	10	VK1DO	10
VHF CW 43	4	VK1DX	10
Totals 3546	33		

VK1		VHF CW	
Points	Logs		
HF Phone 5427	41	VK1DF	12
HF CW 670	13	VK1RH	11
VHF Phone 80	4	VK1DO	10
Totals 6177	60		

VK2		VHF CW	
Points	Logs		
HF Phone 5427	41	VK2ARJ	582
HF CW 670	13	VK2BO	410
VHF Phone 80	4	VK2DGL	403
Totals 6177	60	VK2AYK	390
		VK2PNS	301
		VK2WUP	257
		VK2JW	225
		VK2MUZ	209
		VK2CAAP	205
		VK2LEE	198
		VK2ANK	197
		VK2CJT	122
		VK2AXS	120
		VK2AJI	107
		VK2IV	105
		VK2DDB	103
		VK2GHZ	100
		VK2ETK	99
		VK2KGX	94
		VK2DOJ	87
		VK2BDT	85
		VK2JU	84
		VK2GV	83
		VK2JIM	82
		VK2UC	70
		VK2PN	60
		VK2FBK	49

VHF Phone		VHF CW	
Points	Logs		
VK1ZX	119	VK2ETK	99
VK1DI	116	VK2KGX	94
VK1DF	75	VK2DOJ	87
VK1RH	65	VK2BDT	85
VK1DO	55	VK2JU	84
VK1DX	55	VK2GV	83
VK1PJ	53	VK2JIM	82
VK1EB	45	VK2UC	70
VK1DW	37	VK2PN	60
VK1CEE	10	VK2FBK	49

VK2JH	48	VK3BGC	60
VK2DOP	47	VK3RC	59
VK2XH	33	VK3AGJ	57
VK2ZW	28	VK3JEW	55
VK2PEJ	24	VK3SV	54
VK2FJ	23	VK3CHR	52
VK2AL	23	VK3PAT	50
VK2MX	21	VK3KT	49
VK2GJ	20	VK3JUC	49
VK2GS	20	VK3PTR	47
VK2RJ	20	VK3HG	40
VK2PY	12	VK3SAC	38
VK2CF	11	VK3NZO	35

VK2 HF CW		VHF Phone	
Points	Logs		
VK2X	154	VK2AK	34
VK2GS	83	VK2BDT	16
VK2DLO	80	VK2JU	15
VK2BO	53	VK2ALZ	14
VK2AC	50		
VK2GT	47		
VK2JUS	39		
VK2KM	35		
VK2XH	33		
VK2DOP	33		
VK2OL	22		
VK2EL	21		
VK2RJ	20		

VK2 VHF Phone		VHF Phone	
Points	Logs		
VK2AK	34	VK2AK	34
VK2BDT	16	VK2BDT	16
VK2JU	15	VK2JU	15
VK2ALZ	14	VK2ALZ	14

VK3		VHF Phone	
Points	Logs		
HF Phone 8200	66	VK3JH	592
HF CW 929	18	VK3SAM	492
VHF Phone 6641	48	VK3ALZ	418
Totals 15770	132	VK3BO	380

VK3 HF Phone		VHF Phone	
Points	Logs		
VK3ABO	592	VK3ACR	846
VK3SAM	492	VK3ABO	461
VK3ALZ	418	VK3FHP	461
VK3BO	380	VK3APC	424
VK3FHP	261	VK3YH	388
VK3PD	247	VK3YV	322
VK3YH	229	VK3YD	265
VK3DS	201	VK3YV	247
VK3PD	190	VK3ZNE	208
VK3NTV	186	VK3ACT	174
VK3AEV	186	VK3BGC	168
VK3PK	180	VK3KTO	159
VK3ALK	170	VK3XMD	155
VK3GRA	166	VK3MGS	143
VK3CX	157	VK3CRA	140
VK3DMK	157	VK3BDO	138
VK3ANM	157	VK3WEG	131
VK3SZ	156	VK3KJ	131
VK3OM	154	VK3JTA	127
VK3XF	152	VK3JUD	119
VK3ABP	138	VK3JMB	117
VK3DVT	127	VK3MDG	114
VK3OP	125	VK3CAP	113
VK3XK	122	VK3VB	93
VK3ENX	119	VK3JUI	87
VK3NYL	116	VK3SM	78
VK3DSD	113	VK3JMD	73
VK3CRA	110	VK3GJA	59
VK3DSCS	100	VK3ZPF	57
VK3SM	95	VK3CLS	50
VK3JNE	90	VK3AEV	49
VK3DNC	89	VK3SAA	48
VK3AHY	85	VK3ZV	47
VK3MBCU	73	VK3DVB	45
VK3ABT	71	VK3BPN	35
VK3BAS	65	VK3MFM	34
VK3CLS	62		
VK3BMG	62		

VK3JT	34	VK3AO	33
VK3XO	30	VK3UFC	26
VK3PAT	22	VK3XH	22
VK3CAY	21	VK3PAT	21
VK3ZUG	15	VK3CAY	20
VK3ZKP	13	VK3ZUG	15
VK3J	13	VK3ZKP	13
VK3AQ	13	VK3J	13

VK4		VHF Phone	
Points	Logs		
HF Phone 5681	44	VK4DRC	285
HF CW 722	13	VK4NEF	275
VHF Phone 307	13	VK4YV	270
Totals 6710	70	VK4BAY	252

VK4 HF Phone		VHF Phone	
Points	Logs		
VK4YB	683	VK4ACW	155
VK4IB	454	VK4V	144
VK4LT	481	VK4CRR	135
VK4WD	353	VK4PT	132
VK4DRC	285	VK4QF	129
VK4NEF	275	VK4AMD	129
VK4YV	270	VK4D	127
VK4BAY	252	VK4PS	125
VK4ACW	155	VK4BSH	114
VK4V	144	VK4PJ	110
VK4CRR	135	VK4RM	108
VK4PT	132	VK4AD	100
VK4QF	129	VK4AK	100
VK4AMD	129	VK4AGL	100
VK4D	127	VK4DX	81
VK4PS	125	VK4ACL	80
VK4BSH	114	VK4EB	78
VK4PJ	110	VK4SA	75
VK4RM	108	VK4MCY	73
VK4AD	100	VK4UJ	54
VK4AK	100	VK4DRM	53
VK4AGL	100	VK4ZT	40
VK4DX	81	VK4WIT	37
VK4ACL	80	VK4PVH	37
VK4EB	78	VK4DV	35
VK4SA	75	VK4BG	30
VK4MCY	73	VK4ZGL	30
VK4UJ	54	VK4FB	28
VK4DRM	53	VK4KRR	26
VK4ZT	40	VK4ADY	25
VK4WIT	37	VK4WZ	25
VK4PVH	37	VK4EV	19
VK4DV	35	VK4IW	16
VK4BG	30	VK4MOT	15
VK4ZGL	30	VK4OE	13
VK4FB	28	VK4LZ	12
VK4KRR	26		
VK4ADY	25		
VK4WZ	25		
VK4EV	19		
VK4IW	16		
VK4MOT	15		
VK4OE	13		
VK4LZ	12		

VK4 VHF		VHF Phone	
Points	Logs		
VK4WZ	98	VK4WZ	98
VK4ZBV	34	VK4ZBV	34
VK4OE	25	VK4OE	25
VK4PVH	37	VK4PVH	37
VK4DV	35	VK4DV	35
VK4BG	30	VK4BG	30
VK4ZGL	30	VK4ZGL	30
VK4FB	28	VK4FB	28
VK4KRR	26	VK4KRR	26
VK4ADY	25	VK4ADY	25
VK4WZ	25	VK4WZ	25
VK4EV	19	VK4EV	19
VK4IW	16	VK4IW	16
VK4MOT	15	VK4MOT	15
VK4OE	13	VK4OE	13
VK4LZ	12	VK4LZ	12

VK5		VHF Phone	
Points	Logs		
HF Phone 5681	44	VK5AYD	549
HF CW 722	13	VK5ATU	440
VHF Phone 307	13	VK5ARN	476
Totals 6710	70	VK5JUI	425

VK5 HF Phone		VHF Phone	
Points	Logs		
VK5AYD	549	VK5SAR	377
VK5ATU	440	VK5CN	308
VK5ARN	476	VK5GN	298
VK5JUI	425	VK5EE	278
VK5SAR	377	VK5BR	265
VK5CN	308	VK5ABS	262
VK5GN	298	VK5BWH	255
VK5EE	278	VK5STT	251
VK5BR	265	VK5DK	207
VK5ABS	262	VK5APC	160
VK5BWH	255	VK5ATN	134
VK5STT	251	VK5NW	133
VK5DK	207	VK5AAC	126
VK5APC	160	VK5ST	125
VK5ATN	134	VK5BGZ	123
VK5NW	133	VK5NF	117
VK5AAC	126	VK5NIX	113
VK5ST	125	VK5BFB	107
VK5BGZ	123	VK5RV	104
VK5NF	117	VK5XJ	104
VK5NIX	113	VK5OL	100
VK5BFB	107	VK5ZA	100
VK5RV	104	VK5SL	100
VK5XJ	104	VK5CAM	100
VK5OL	100	VK5CJP	96
VK5ZA	100	VK5KV	95
VK5SL	100	VK5NC	75
VK5CAM	100	VK5ZO	62
VK5CJP	96	VK5ARV	59
VK5KV	95	VK5FO	55
VK5NC	75	VK5FX	48
VK5ZO	62	VK5SR	47
VK5ARV	59	VK5WO	40
VK5FO	55	VK5IT	36
VK5FX	48	VK5RY	30
VK5SR	47	VK5AM	26
VK5WO	40	VK5AK	25
VK5IT	36	VK5AGB	25
VK5RY	30	VK5JUT	13
VK5AM	26		
VK5AK	25		
VK5AGB	25		
VK5JUT	13		

VK5 HF CW		VHF Phone	
Points	Logs		
HF Phone 5681	44	VK5AGX	156
HF CW 722	13	VK5MN	67
VHF Phone 307	13	VK5HD	57
Totals 6710	70	VK5TL	50

VK5 VHF Phone		VHF Phone	
Points	Logs		
VK5AGX	156	VK5AKK	270
VK5MN	67	VK5ZCV	264
VK5HD	57	VK5KIA	118
VK5TL	50	VK5ZIC	93
VK5TR	46	VK5RV	86
VK5JG	22	VK5ACM	85
Total	398	VK5AAC	83
		VK5ZDJ	80

VK5 VHF Phone (Cont)		VK6CX	540
VK5PC	51	VK6FJA	421
VK5NW	50	VK6ZDW	244
VK5NE	46	VK6AD	192
VK5MD	45	VK6JP	190
VK5BW	36	VK6BWI	182
VK5AIM	33	VK6ZLZ	182
VK5ABS	31	VK6SH	172
VK5ZCK	27	VK6SAA	169
VK5ATQ	21	VK6RG	165
VK5APC	21	VK6YF	162
VK5MX	18	VK6JIP	152
VK5XCX	17	VK6SCS	140
Total	2373	VK6HU	138

VK6		VK6RRG	136	
	Points	Logs	VK6TTY	122
HF Phone	46	6071	VK6ZPP	121
HF CW	11	562	VK6YL	108
VHF Phone	48	4891	VK6OD	97
Total	105	11524	VK6OL	95
			VK6LZ	82

VK6 HF Phone		VK6AXB	67
VK6S2	605	VK6DAX	67
VK6ANC	546	VK6XWB	61
VK6UF	502	VK6AN	56
VK6ATZ	419	VK6JBL	56
VK6ED	402	VK6AMB	54
VK6DE	360	VK6AR	50
VK6HU	257	VK6WT	50
VK6SAN	257	VK6KWN	41
VK6AMB	250	VK6WIA	39
VK6JP	240	VK6FC	37
VK6ABS	202	VK6HK	35
VK6BGF	199	VK6RO	34
VK6GW	153	VK6ATA	34
VK6VS	150	VK6KW	28
VK6SH	148	VK6MB	27
VK6IG	140	VK6UT	24
VK6RG	126	VK6APK	24
VK6YF	113	VK6DC	22
VK6PGG	109	VK6BY	21
VK6RU	90	VK6ZBP	21
VK6AV	78	VK6CW	20
VK6KH	65	VK6KG	20
VK6GN	58	VK6RZ	20
VK6EB	57	VK6FG	19
VK6RZ	49	VK6UV	16

VK7		VK7	Points	Logs
VK7C	42	HF Phone	1393	16
VK7AI	44	HF CW	68	2
VK7VZ	34	VHF Phone	1437	14
VK7KG	32	VHF CW	16	1
VK7PNS	29	Total	2914	33
VK7OE	28			
VK7NTJ	27			
VK7HK	25			
VK7FC	23			
VK7MM	21			
VK7UT	20			
VK7RR	20			
VK7APK	20			
VK7SAA	18			
VK7SCS	18			
VK7OU	15			
VK7IV	14			
VK7DRJ	13			
VK7AN	12			
VK7PDR	12			
VK7AO	10			

VK5 HF CW		VK7 HF Phone	1393
VK5HQ	139	VK7KC	299
VK5AFW	111	VK7CK	263
VK5AJ	58	VK7NGC	156
VK5PDR	55	VK7SA	88
VK5R	52	VK7XDV	81
VK5AM	44	VK7XR	81
VK5G	44	VK7AL	67
VK5RU	44	VK7JP	60
VK5ED	12	VK7NBF	58
VK5GA	12	VK7YV	51
VK5RZ	12	VK7LS	49
		VK7SA	38
		VK7PP	36
		VK7GB	26
		VK7RM	20
		VK7EB	20
		Total	1393
		VK7 HF CW	43
		VK7RY	25
		VK7KA	25
		VK7 VHF Phone	260
		VK7KDV	260

VK7ZBW	164	VK7LS	46
VK7GL	156	VK7RM	42
VK7JWR	155	VK7ZG	20
VK7YV	112		
VK7MAT	106	VK7 VHF CW	16
VK7ZF	93		
VK7ZO	86		
VK7EB	83		
VK7AL	65		
VK7SA	50		

VK8		Points	Logs
HF Phone	102	1	2
HF CW	75	1	
Totals	177		

VK8 HF Phone		PNG	140
VK8UW	102	HF Phone	406
		P29MRA	
		P29NJH	
VK8 HF CW		Listener Section	
VK8HA	75	SWL-150728	533
		Peter Kanyon	226
		Nora Young	208
		Charles Thorpe	90
		SWL-160239	54
		SWL-150087	66
			af

VHF/UHF — AN EXPANDING WORLD

ERIC JAMIESON VK5LP — PO Box 169 MENINGIE 5264

All times are Universal Time Co-ordinated (UTC)

Six-Metre Beacons

Freq	Call sign	Location	Grid Square
50.000	G83BUX	England	I073
50.005	ZS2SIX	South Africa	KF25
50.011	J421GY	Japan	PM84
50.012	O24VM	Denmark	J046
50.015	S22DH	Greece	KM27
50.015	V51VHF	Namibia	JG87
50.017	J46YBR	Japan	PM51
50.020	G83SIX	England	I073
50.020	CX1CCC	Uruguay	
50.021	O27YG	Denmark	J055
50.022	FR5SIX	Reunion Is	L678
50.0245	ZP5AA	Paraguay	GG14
50.025	Y44AB	Venezuela	G040
50.025	OH1SIX	Finland	KP11
50.025	6V5RC	Jamaica	FK17
50.027	9H1SIX	Malta	JM75
50.028	J42MA	Japan	OM07
50.029	CT0WW	Portugal	IN61
50.0325	ZD8VHF	Ascension Island	I122
50.032	ZS5SIX	South Africa	KG50
50.033	LU8YYD	Argentina	FF50
50.035	ZB2VHF	Gibraltar	IM76
50.035	ZS3VHF	South Africa	JG87
50.035	V73AT	Marshall Is	RJ38
50.039	FY7THF	French Guyana	GJ35
50.040	VO1ZA	Newfoundland	GN37
50.040	SV1SIX	Athens	KM17
50.041	F05DR	Tahiti	BH52
50.042	G83CTC	England	I070
50.043	ZL3MHF	Christchurch	RE66
50.044	JR7YAG	Okinawa	PL36
50.045	OX3VHF	Greenland	GP60
50.045	Y44Z	Venezuela	FK60
50.046	VK8RAS	Alice Springs	PG66
50.0475	FX4SIX	France	JN06
50.048	TG4BFK	Guatemala	
50.050	G83NHQ	England	I091
50.050	ZS6DN	South Africa	KG44
50.050	V75SIX	Canada	DN09
50.051	L75SIX	Norway	JP59
50.0525	ZL3MHF	Greenmouth	RE57
50.054	VK5SIX	Hamilton	OF02
50.056	VK8VF	Darwin	PH57
50.057	TF3SIX	Iceland	HP94
50.060	G83RMK	Scotland	I077
50.060	PY2AA	Brazil	GG66
50.061	KH6HME	Hawaii	BK29
50.0625	G83NGI	Northern Ireland	IO65
50.064	W07Z	Arizona	EL59
50.0655	G83IOJ	Jersey	IN89
50.065	NB301	Rhode Island	FN41
50.066	VK8RPH	Perth	OF78
50.069	K6VF	Woodside	CM87
50.070	E43VHF	Spain	JN01
50.073	KH6HI	Hawaii	BL01
50.073	ZS4SA	South Africa	KG33

50.075	V86SIX	Hong Kong	OL72
50.078	P77BCN	Brazil	HO16
50.079	T12NA	Costa Rica	EJ79
50.080	H8SIX	Galapagos Is	E159
50.080	S8SIX	Sweden	JO57
50.082	V1MUUF	New Brunswick	FN66
50.082	H8SIX	Galapagos Is	E159
50.085	9HISIX	Malta	JM75
50.086	VE2STL	Quebec	FN46
50.0865	LU1MA	Argentina	AF87
50.090	KJ6BZ	Johnston Island	KK51
50.091	9L1US	Sierra Leone	IJ38
50.092	W5GTP	Louisiana USA	EM40
50.100	H2FQ	Ecuador	E97
50.100	5H1HK	Tanzania	
50.110	A61XL	United Arab Emi	LL74
50.120	457EA	Sri Lanka	MJ96
50.321	ZS5SIX	South Africa	KG50
50.490	JG12OW	Cyprus	KM96
50.499	5B4CY	Cyprus	KM96
50.904	ZS1STB	South Africa	KF75
51.020	ZL1UHF	Auckland	RF03
52.100	ZK2SIX	Niue	AH50
52.310	ZL3MHF	Christchurch	RE66
52.320	VK6RTT	Wickham	OG89
52.325	VK4RHV	Newcastle	OF57
52.330	VK3RGG	Geelong	OF21
52.345	VK4ABP	Longreach	OG26
52.370	VK7RST	Hobart	OE37
52.420	VK2RSY	Sydney	OF56
52.425	VK2RGG	Gunnedah	OF50
52.440	VK4RTL	Townsville	OH39
52.445	VK4RIK	Cairns	OH23
52.450	VK5VF	Mount Lofy	PH95
52.465	VK6RTW	Albany	OF84
52.470	VK7RNT	Launceston	OE38
52.510	ZL2MHF	Mount Cinnie	RE78

Ron VK4BRG kindly sent me a condensed version of a recent beacon list which appeared in the KA3B newsletter. I have combined it with my own 6m beacon list, less the Australian beacons on 52MHz, as there are some beacons listed which may be useful even in the latter part of the equinox — thus it appears one month early. My thanks to the above for permission to reproduce.

Six Metres

September was relatively quiet with the occasion Es opening to VK4. However, on 8/9 around 0100 Col VK5RO was observed working W6ANE on CW and KG6DX at 4x4. It has even been quiet in Brisbane!

Hugh VK5BC said he had been hearing backscatter signals from VK4, VK2 and VK3OT. He also scored KG6DX on 8/9 along

with VK1RX, VK2GLS and VK4KK. On 11/9 there was an opening to Japan from 0545 to 0615. Beacons JA2IGY heard at 0603 and JA7ZMA at 0555. On 12/9 at 2340 Hugh worked KG6DX. Hugh said a "rough count" shows he has worked 45 countries.

Graham VK6RO has received confirmation of his contact on 27 April 1991 with 7Q7JA in Malawi. The operator, Yosi Kawaku, used a TS680S and a 70W amplifier to a five-element Yagi 15 metres high. Graham has now worked and confirmed 28 countries.

From Sarina

Ron VK4BRG from Sarina, in recent times has been sculling around somewhat; first a return visit to YJ8 where he met Simon YJ8GP. Ron has copies of his log and will be assisting by sending out required QSLs. Then it was off to China where he spent some time with BZ4SAA, and this will be the subject of a separate article in AR in due course.

Since arriving home on 24/8 Ron said there has been a reasonable quantity of TE propagation, mainly to KH6, V73 and JA most days. The following is a summary of such happenings: 26/8: 0028 to 0207 — 18 contacts, mainly to W5, but with some in W6, also K1HTV/3 in Maryland, which was a good catch. 30/8: 2349 K5CM. 3/9: 0005 to 0203 — 13 stations in W5. 5/9: 0809 BY4SAA who also worked a number of other northern VK4 stations. 10/9: 0022 WQ6S. 12/9: 0247 WQ6S; 0255 K5CM; 0831 KH4F; 1008 JD1BFT Ogawara. A86Q/MM has been active again from the region of Japan. Ron comments that the single contacts to W5 in the main simply came "out of the blue" by him being there at the right time!

New distance records

Those aspiring to set world distance records on the 3456 and 5650MHz bands will need to cast their eyes to fields far beyond Australia as the result of two new records set on 28 July 1991.

On this date N6CA in Palos Verdes, California, made contact with KH6HME situated at an elevation of about 2500 metres (8200 feet) on the side of Mauna Kea volcano in Hawaii, first on 3456MHz, and a short time later on 5650MHz.

Whilst I hesitate to suggest these records may not be bettered, I think it would be safe to say they will stand for a long time. Congratulations to those involved. If my memory serves me correctly, I believe the 1296MHz and 432MHz records are over the same path.

On 2300 and 3456MHz Reg VK5QR and Wally VK6WG hold the Australian records for a distance of 1885.5km on each band. The 5650MHz record is held by VK5NT and VK5ZO at 176.4km. On 1296MHz Les VK3ZBJ and Wally VK6WG have worked 2449.3km and 432MHz VK3ZBJ to Wally VK6KZ/6 at 2715.9km. 144MHz is held by VK4BFO and J17DMB for a distance of 6763km.

Long path records

On the 50-54MHz band an interesting situation prevails when determining the distance. During the past few years there has been evidence that short and long paths appear to exist, and not necessarily simultaneously. The Australian short path record is held by VK8RH with a contact to 8R1AH over a distance of 18,857.9km.

As long path distances are now accepted internationally, John Martin VK3ZJC, Chairman of FTAC, has made the following statement:

"Calculation shows that unless the path tends to hug the equator fairly closely, the figure of 40,008km for the earth's circumference is quite accurate. I have therefore calculated the short path distance and subtracted this from 40,008km to arrive at the long path figure. Due to the margin of error involved, I have rounded off these figures to the nearest kilometre."

The WIA is now issuing a "Certificate of Achievement" to those amateurs who have recorded distance records for their States. Recent awards have been made to Steve VK3OT for his VK3 record contacts with F6HWM on 19/10/89 for a distance of 16,887.8km, and to G4UPS on 19/02/91 at 16,921.6km.

Additionally, Steve VK3OT has received the award for the national record on six metres for his contact with 9Q5EE on 6 April 1991 over the long path distance of 27,186km. The short path distance was calculated at 12,822km. Congratulations—that long path distance will be hard to better.

Two other claims are being processed by John VK3ZJC for long path records — VK2BBR to 6W1QC for a new VK2 record of 21,384km and VK4AZ to 6W1QC for a new VK4 record of 21,741km. Also, a new VK1 record of 16,082km has been set by VK1RX to KP4A, and a new national mobile record of 16,242km by VK4AZ to FM5WD. Good work, gentlemen.

EME update

Doug VK3UM reports that he has always been on air for the North American windows, but has had to be content with mainly random QSOs. On 7/7/91 0030 he worked GJ/F6KX for country 29; 2/8 2058 UC2U/UB4LL for country number 30. 3/8 1550 JA9BOH, 1608 K1RSA, 2218 ZL3AAD, 2324 OK1KR, 2338 UT5UAS, 2349 DL3YEE, 2356 IK5AVM, 2358 DF9QX.

30/8 2054 LA8LF, 2117 DF3RU, 2135 OK1KR, 2148 SMAIVE, 2212 FIANH. 31/8 2128 RB5LGX, 2225 HB9SV, 2235 JA2JRJ, 2249 DJ6MB. 1/9 1623 JA9BOH, 2225 SMAIVE and DJ6MB in a three-way SSB contact, 2303 UT6DL, 2313 DK0TU, 2321 SM6EUP, 2330 UT5UAS. The contact with DK0TU at 2313 represented Doug's initial contact number 145.

Six metres standings list

The next list is due to be published in the February 1992 issue, so input will be necessary by 15 December, please.

When the list was first offered about 10 years ago, I expected it would generate a reasonable degree of interest and there would be some rivalry amongst those near the top, but as it related to a hobby, I considered any rivalry would be friendly. Unfortunately, not all the rivalry has been friendly, and there have been accusations made about the credibility of some claimed contacts and QSLs.

With the advent of Cycle 22 and the excellent propagation conditions which resulted in so many good contacts being available to those prepared to really work at 50MHz, many amateurs suddenly realised they were assembling respectable tallies of countries worked. I suppose it was inevitable there would be some queries of who worked what and when, and in response to some apparent evidence I worked at the Standings List over a long period to ensure the claimed QSLs were accurate, particularly those relating to Cycle 21 in the early 1980s. In some cases there were rejections and withdrawals, but in the end I finished up with what seemed a satisfactory list. That's why amateurs were asked to send me their cards, copies of QSLs or a certified list.

After all this, I now find there are queries in regard to Cycle 22 contacts, with overseas amateurs becoming embroiled when they are written to and required to answer questions in regard to some of their contacts and QSL information. To say that some of them have not been impressed with the queries would be an understatement! So it seems to me there is still an amateur spirit out there which says you do not question your fellow amateurs' operating habits, at length, whether seemingly justified or not, unless the enquiry is made by someone at official level with a need to know!

I want to make it quite clear that what constitutes a valid contact for the world-renowned ARRL VHF DXCC Award, when a claim for that certificate is finally made, will be decided by the DXCC body and no one else. They will certainly not be accepting any QSLs from Australian amateurs for 50MHz contacts made between 1 January 1964 and 31 December 1984 inclusive, being that period when we were not permitted to use 50-52MHz.

From 1 January 1985 to 30 June 1989 there were restrictions placed on amateurs in VK2, VK3 and VK4 who were permitted operation only outside the operating hours of Channel 0 television, which meant virtually no legal operating at all from those states. VK5, VK7 and VK8 could operate at all times, but with reduced power, and there were no restrictions in VK6 — for details refer to page 5 of AR for August 1984. From 1 July 1989 most restrictions were lifted except for those stations operating within certain defined distances of

Channel 0 stations or translators.

What I am saying is that if any of you is planning to eventually submit QSLs for the ARRL DXCC VHF Award, then it is fairly safe to say the DXCC body will accept only 50MHz QSLs from VK2, VK3 and VK4, in particular, which are dated from 1 July 1989. If you worked countries prior to that date and as far back as 1 January 1964, then you had better ensure you have worked them again and received a QSL with an acceptable date or you worked them on 52MHz.

My Standings List will not matter one iota to the ruling DXCC body at the appropriate time. They have a lot of information at their

fingertips and the slightest doubt about any contact will bring instant rejection, whether you like it or not! But that does not mean we cannot have a Standings List in Australia, one where all who are listed can gradually improve their totals, and if you're in doubt about the legitimacy of any of your contacts, for whatever reason, then obviously you would make an effort to rework the country to satisfy yourself and your place on the list.

I will be assessing the meaningfulness of the Standings List during the next few months, and if I believe it is not serving its original purpose then, with regret, after February 1992 it will be withdrawn. Therefore, I am

looking for some support from the rank and file members.

Closure

Hopefully, by the time the December issue arrives, I will be able to report a flurry of activity on six metres for the October period.

Closing with two thoughts for the month: "The trouble with some self-made men is they insist on giving everybody their recipe" and "Marriage is like the army. Everybody complains — but you'd be surprised at how many re-enlist".

73 from The Voice by the Lake

ar

ALARA

DOROTHY BISHOP VK2DDB — 153A GALSTON RD HORNSEY HEIGHTS 2077

At the time of writing this month's column, three of my children are on school holidays so I thought I'd share an idea for a "toothpaste box" handheld that other mums and grandmothers may find interesting. I was involved with a playgroup for 15 years and used this idea as a craft activity once each year.

You need: A small empty box - a toothpaste or lolly box, etc - covered in plain paper; a small self-adhesive address label for the 'display' and some small round spots for the number buttons; a small foam circle and a paper fastener for the press to talk button; a pipe cleaner for the aerial.

Assemble in the above order and write numbers on the "buttons".

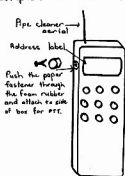
It was followed by a short simple talk and demonstration - a prearranged 2m repeater contact. The Morse code on the repeater led to a chat about Morse code and the phonetic alphabet. After a short question time, the children's names would be written on card in either Morse or phonetics. This activity was always very popular, and most mothers reported the next week that "aerial spotting" was the favourite pastime when out driving.

Today I had a chat with Joyce VK2MI. She was in the middle of making Christmas decorations and rather welcomed the chance to put the glue down. Joyce's OM, Dudley (then VK2LQ) was a keen CW man and Joyce originally intended to study only the Morse Code so she could listen-in to his conversations. She was steered towards the WIA Amateur Radio course and attended Florence McKenzie's classes for CW. Joyce was licensed in 1947 and remembers her first contact was "with a chap in Wentworth", who made the place sound so interesting that she always wanted to visit it.

Although she never did visit Wentworth, she regaled me with a story from "out west".

Just recently Joyce took a trip to Broken Hill, and on the ceiling of the hotel ballroom was a large painting of a reclining nude. There was to be a religious conference held in

The 'toothpaste box' handheld.



the ballroom, so not wishing to shock the church dignitaries, the hotel staff pinned two flimsy scarves to the offending bits. However, much to everyone's amusement, a gentle breeze rearranged the scarves.

Travelling Around

Some of our ALARA members have had extensive travels during the year. Most are settled back home now and the rest will be home for Christmas. Jenny VK5ANW and daughter Wendy left on 1 August for England and America, then returned via New Zealand where she met Alma ZL1WA. Helene VK7HD also left on 1 August for Canada. She enjoyed meeting Joan YD7YB, went touring in a motorhome convoy through breathtaking countryside, then came home to Australia via Hong Kong. Maria VK5BMT is home after six months in the northern parts of Australia. Marlene VK3WO visited Poppy VK6YF on her homeward run after a long northern trip. Mavis VK3BIR, also touring up north, says she thought there were more VK3/5 YLs mobile up north, than there were staying at home.

Welcome to new members Ruth GW7FNR, sponsored by Marilyn VK3DMS, and Barbara

ZL3AHS sponsored by Robyn VK3ENX. Barbara is visiting VK2 for 10 days from 22 November and I am planning to meet her and hopefully let her talk to her OM (Alistair ZL3TT) who is at home minding the three children. I shall have to tidy the ham shack before then; in fact that is a job I should do before the ALARA Contest.

Washing the car and the windows hasn't induced the rain here.

Will our contest bring a storm and break the drought in Sydney?

Looking forward to catching up with every one on the ALARA Contest on 9 November 1991.

73/33 Dorothy

ar

More About the Cover

Members of ALARA participated in the promotion of amateur radio at the Hobby and Craft Fair held in Adelaide on 27 and 28 July. As 27 July was designated as ALARA's Birthday Activity Day for 1991, we operated HF from the stage of the Centennial Hall, seeking as many contacts as possible world-wide. We were surrounded by working exhibits of ATV, weather fax, satellite programs, another HF rig operating CW, as well as a display of vintage transceivers all set up by WIA members.

ALARA members are gearing up for our annual contest on Saturday/Sunday 9/10 November from 0001 to 2359 UTC. This contest is open to all licensed amateurs and SWLs world-wide, and a wide range of achievements is rewarded with certificates. Details have been published in October '91 *Amateur Radio*. This is a friendly contest with time for a brief chat whilst the contact is being logged, so we look forward to meeting lots of amateurs on the day. We promote CW by means of the Mrs Florence McKenzie Award for the Australian YL novice (ie not a full call) operator with the highest CW score — not necessarily an ALARA member — and I hear at least one operator is keen to win this year!

MEG VK5AOV

SECRETARY AND VK5/8 STATE REP AR

AMSAT

BILL MAGNUSSON VK3JT - 359 WILLIAMSTOWN RD YARRAVILLE 3013

Packet: VK3JT@VK3YZW

National Co-ordinator

Graham Ratcliff VK5AGR

Please take note of the AMSAT information nets:

AMSAT AUSTRALIA net:

Control station VK5AGR

Check-ins commence at 0945z on Sunday nights

Bulletin commences at 2000z

Frequencies 3.685MHz or 7.064MHz. At present 7.064MHz is used.

AMSAT SW Pacific net:

2200z Saturday on 14.282MHz.

Experienced satellite users and newcomers alike are welcome on the nets. A large body of experience is on hand to answer queries. Listen to the WIA Divisional broadcasts for regular AMSAT information.

AMSAT Australia Newsletter and Computer Software:

Satellite users, whether experienced or newcomers, will benefit by subscribing to the AMSAT Australia newsletter and software service. The newsletter is published monthly by Graham VK5AGR. Subscription is \$20 payable to AMSAT Australia, addressed as follows:

AMSAT Australia

GPO Box 2141

Adelaide 5001

The newsletter provides up-to-date information on all current and planned satellite activity. Graham also provides a first class software service for satellite users. New software is reviewed regularly in the newsletter.

DOVE Update

Last month I mentioned that control station N4HY was uploading the new software for the digtalker. It seems this procedure is still in progress at the time of writing. DOVE has been silent for a week or so apart from the 2401.22MHz beacon. "S" mode is used to perform software uploads. All indications are that we won't have to wait much longer; keep listening on two metres.

RS Report

Bill VK3WEG reports that RS-10/11 and RS-12/13 have been providing some good interstate and local contacts during both day and evening passes. The ROBOts are responding well to crisp, clean hand-sent CW. Some problems have been noticed during recent times of high solar activity with transponder signals varying in strength. Both 29MHz downlink and 145MHz uplink signals can be affected. Try these satellites during day or evening, they offer the best and cheapest way to "get your feet wet" in the amateur satellite area.

Omnidirectional antennas and 25W of RF will usually do the trick. Doppler shift is minimal.

AO-10 Status

We can look forward to Oscar-10's usual period of activity around Christmas and into the new year. Although very much out of control, the old bird has provided many excellent contacts during this period over the past few years. There have been some problems lately with co-visibility of Oscars 14 and 22 putting extra load on AO-10's power source. These satellites have transmitters in AO-10's listening band and if they're close enough they can act like a continuous uplink signal and put an extra load on the batteries. As always when using AO-10, keep a watch on the beacon. It's now only a continuous key-down signal. Watch out for frequency change or FMing, which will indicate transponder overload. Cease transmitting immediately if this happens.

AO-13 Status

This satellite is in apparent perfect health, although it is still drifting further into the northern hemisphere. (Good luck for them, bad luck for us). We don't see apogees any more, so equinox angles are not good. If it lives

long enough, and there is some doubt, we should start to see good conditions again around 1995. Most activity in VK/ZL seems to take place around perigee and out to MA 100.

AO-13 transponder schedule until 12 December 1991:

Altitude : 180/0

Mode B : MA 000 to MA 095

Mode JL : MA 095 to MA 125 Except 17 Nov to 25 Dec

Mode LS : MA 125 to MA 130 B transponder OFF

Mode S : MA 130 to MA 140 MA 10-40

Mode B : MA 140 to MA 256

Omni antennas : MA 230 to MA 030

SARA: This satellite is a bit of a worry. Rather like the Pakistani BADR-1 in some ways. The problem is that, like BADR-1, SARA is **not** an amateur radio satellite, and yet it is transmitting in the 2m amateur radio band. It probably has slightly more legitimacy than BADR-1 in that it is an amateur astronomy satellite. It's a pity the 2m downlink frequency wasn't negotiated with AMSAT before launch rather than just appearing in the satellite segment, which is pretty crowded already and subject to some rather remarkable frequency juggling by amateur radio satellite designers. Let's hope this sort of thing doesn't become any more prevalent. SARA probably has more than enough educational merit to have warranted a spot in an amateur satellite band with a more co-operative effort by the designers.

MIR

Whilst on the subject of frequency management, it appears that MIR is to change to

Satellite Activity for June/July 1991

1. Launches

The following launching announcements have been received:

Int'l No	Satellite	Date	Launch Nation	Period min/km	Apog km	Perig deg	Inc
1991 —							
044a	RESURS-111	28 Jun	USSR	88.8	269	192	82.3
045a	REX	29 Jun	USA	101.3	871	770	89.6
046a	GORIZONT 23	01 Jul	USSR	23h50m	35572		1.4
047a	USA-71	04 Jul	USA	704.6	20250	19451	55.3
047b	LOSAT-v	04 Jul	USA	92.8	416	402	40.3
048a	COSMOS 2152	10 Jul	USSR	88.7	266	188	82.0
049a	COSMOS 2153	10 Jul	USSR	89.0	292	192	64.9
050a	ERS-1	17 Jul	ESA				
050b	UOSAT-F	17 Jul	ESA				
050c	ORBCOMM-X	17 Jul	ESA				
050d	TUBSAT	17 Jul	ESA				
050e	SARA	17 Jul	ESA				
051a	MICROSAT-1 THROUGH	17 Jul					
051g	MICROSAT-7						
052a	RESURS-F12	23 Jul	ussr	88.7	261	195	82.3

2. Returns

During the period 36 objects decayed including the following satellites:

1981-017a	HINOTORI	11 Jul
1991-036a	COSMOS 2149	04 Jul
1991-044a	RESURS-F11	21 Jul

3. Notes

1991-050B UOSAT-F

This spacecraft operating within the 2m and 70cm amateur bands was named OSCAR 22 (or UOSAT 5) after launch. The 1991-050 series of satellites was launched by the same ARIANE rocket booster from the Kourou Space Centre, French Guiana.

BOB ARNOLD VK3ZBB

ar

145.975MHz, which is a frequency used by AO-14. Beats me why. There're sure to be times when they will be in range of each other. Only time will tell how this works out.

Gateway Stations

The "packet" satellites UO-14, AO-16 and LU-19 are all working well and have come through their commissioning with flying colours. The question now is how long before we

see them integrated into the terrestrial packet networks by gateway stations. In our part of the world at the moment there is only one ZL station actively feeding material into the system from UoSat-3. It offers an excellent way of getting the latest worldwide news as quickly as possible. Unfortunately a completely automated system is a costly business. Maybe we'll eventually see a couple of VKs set up gateway stations. It'll beat the pants off the HF packet system for overseas mail! ar

EDUCATION NOTES

BRENDA EDMONDS VK3KT - PO Box 445 BLACKBURN 3130.

It is now some time since the topic of alternative entry paths to an amateur licence was discussed. Perhaps, considering the future that developed over the examinations proposals when the WIA began to implement a policy which had been established some years previously, it is time to reconsider and review the situation.

Over the years a number of schemes have been proposed, all aimed towards increasing amateur numbers by making the hobby more attractive and more easily entered. Three main proposals come to mind - a lower level theory with emphasis on Morse code, a digital-type licence to attract the computer enthusiasts, and a code-free Novice licence. Others have proposed a restructuring of the present licensing system, with use of various modes permitted only after passing an examination on that topic. An Executive Sub-Committee is at present investigating some of these proposals.

The 1988 Federal Convention, in accepting the report and recommendations of the Future of Amateur Radio Working Party, endorsed the proposal for a code-free Novice licence. (This report was published in the April 1988 issue of *Amateur Radio* magazine) At that time, Novice privileges were being extended to include the 146-148 MHz segment. It seemed appropriate to consider entry via a Novice level theory examination without a code qualification to permit operation only on the 2m segment. To seek approval for this licence has been WIA policy since that date.

We need to consider sometimes what it is we are trying to do. Are we encouraging recruitment into the hobby simply for the sake of greater numbers (and thus presumably greater strength)? Or are we so proud of our hobby and so excited about it that we wish to share our enjoyment more widely? Perhaps we should be discouraging any increase in numbers to forestall the inevitable band overcrowding and interferences. Should we aim for an even more exclusive hobby, with a higher standard entry level, so that it is only the really dedicated who are able to obtain a licence?

I have previously raised the question of the groups that are being addressed in any recruitment campaign or with the development of a new licence level. It becomes ever more apparent that the days of the excited young student are past. Most of the youth today are blasé about radio, and see little difference between amateur radio and CB, except for amateur radio you have to learn Morse code. The excitement of direct contact with a foreign country is somewhat dimmed when we have had television cameras sending images from a war zone, and satellite telephone linkages are commonplace. If we are to attract that generation, we must give it a simple easy way to enter, and a lot of encouragement in early contacts.

There are two groups that could make up the main part of our new recruits, the retirees and women. These groups have been neglected in the "Get them young" campaigns. There is considerable talent and enthusiasm waiting to be tapped by any Club or Division which sets out to attract new recruits from these groups. Perhaps a code free licence is the way to show these recruits what amateur radio has to offer, and to allow them to show what they can offer to amateur radio.

Look around your Club membership, and see where your most recent members have come from. If your Club is doing its job, your newest recruits should be the ones most active in encouraging more recruits. If the most newly licensed are hesitant about participating in Club activities, or fail to maintain the enthusiasm which carried them on to get their licences, the Club, and the whole amateur body, is letting them down.

73 Brenda

ar

**Remember to leave a
three-second break
between overs when
using a repeater**

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Video enhancer kit K3463	\$49.00
VT203, 60 mins, VCR maintenance video	\$48.00
VT204, 85 mins, VCR repair video	\$48.00
VT201/8, 20 mins, demonstration video	\$15.00
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Analogue trainer kit (no case) XK 120K	\$189.00

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HOW'S DX

STEPHEN PALL VK2PS - PO Box 93, DURAL 2158

I wonder sometimes whether the message gets through at all. What message? The simple message of: listen, and listen again, before you transmit.

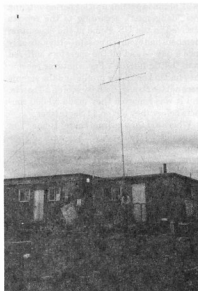
I am talking about the unacceptable behaviour and technical incompetence of many so-called modern DXers who are unable to handle pile-ups caused by the appearance of a rare DX station on the bands. The case in point was the recent activity from Myanmar (XY0RR) and from Albania (ZA1A). Most of the time, both stations worked a "split" frequency operation. In simple terms: they transmitted on a given frequency and listened on a different frequency, usually "up" 5-7kHz or even 60-70kHz away from the transmitting frequency.

If you have an old-style station with a separate transmitter and a separate receiver, this kind of operation should pose no problem for you. If you have a modern, but not so new, transceiver with one VFO only, you have a problem, and you should not attempt to work a station which does not operate in the transceive mode (transmitting and receiving on the same frequency). If you have a new-style modern transceiver with twin VFOs, you ought not to have a problem, but it appears that many of the DXers—among them well known callsigns—have a problem, because they do not know how to operate the twin VFOs and the simple memory channel bank which regulates them.

Blundering into a silent transmitting frequency without listening first for a reasonable time invites disaster. You will have instant reaction from the dozen or so "police-men" who sometimes, not so politely, will tell you where to go, thus causing a bedlam which completely wipes out the DX station transmitting frequency. Actions like this will not help and cause more frustration for everybody. So please listen first.

Finding out the listening frequency is reasonably easy. Just find the pile-up. By listening on the DX station transmitting frequency, you should be able to find out the DX station callsign, the QSL information and the frequency or frequency range where the DX station is listening. This procedure might take some time, so be patient and listen and listen. Listen to the pile-up. You will find it moves up and down in the frequency range given. By studying the response behaviour of the pile-up, you should be able to judge the listening method of the DX station. Check the transmit and receive frequency again, make sure the VFOs are correctly set and that your hand can do the switching (this really depends on the technical "finesse" of your equipment) of channels independently from your eyes, which are focused on the frequency

display. Naturally, if you have a "VOX" it will help to activate your microphone, otherwise you use your free hand and your instant reflexes to operate the PTT switch. Take a deep breath and have a go. Good luck!



*The living quarters of Peter VE8PW.
Dipole antennas in the background.*



When not chasing grizzly bears, Peter VE8PW relaxes with amateur radio.

Albania — ZA

Finally, it happened. On 17 September, around 1320 UTC, ZA1A appeared on 14145kHz. The first days of the activity were chaotic. After a solid three days of working the USA almost exclusively, then another three days of working the Japanese and, in between, the Europeans, ZA1A finally turned its attention to the South Americas, the Pacific and VK/ZL on the longpath around 0500 and 0600 UTC. This gave us in the Antipodes the opportunity to work Albania after many months, many years and even after decades of waiting. Some interesting background information:

- * Eight complete stations with multiple beams and amplifiers were donated to the Albanian Radio Amateur Transmitting Society by a Japanese radio amateur equipment manufacturer.
- * The visiting operators and training groups were allowed into Albania without a visa, courtesy of the Albanian Government.
- * The establishment of amateur radio in Albania is the result of a two-year project. This involved visits to Albania by Martti OH2BH, and visits by Albanians to Finland.
- * It is also noted that the General Secretary of the ITU (International Telecommunication Union) is a Finnish national, Dr Pekka Tarjano, who was present when the first contact was made between the ITU headquarters in Geneva and the PTT in Albania.
- * Whilst all these activities have taken place in Tirana, the President of the Albanian Republic was in Finland to sign the well-known treaty for European security and arms reduction on behalf of his country.
- * The ZA1A station was located at the PTT

headquarters and access was limited. Night-hour operation was not possible.

- * It is expected that ZA1A will shut down on 7 October. Hopefully other Albanian national stations will be active afterwards.
- * The present Albanian radio amateur student base is very well qualified. Out of 11 applicants in the class, eight are engineers, representing several government and education institutions.
- * The opening ceremony was attended by 50 important local and international officials, and the event was televised on Tirana television.

You might ask the question: well, what happened to the Hungarian groups which for years tried to operate from Albania? They did not get lost, but turned up around 24 September in Tirana, the capital of Albania. Z1AQA was operated by HA0MM and HA0NNN. The second group, Z1IHA, was operated by Zoli HA5PP. Both groups arrived almost at the same time, and set up station about 3km away from each other. The DX fraternity of the world could not believe what they were hearing. After years of waiting, not one, but three, Albanian stations operating at the same time? This must be a miracle? Well, it was not, but no sooner had the Hungarians started to be active than the validity of their licence to operate came under a cloud of doubt. From this distance, from VK, it is difficult to see or understand the "ins" and "outs" of real politics and amateur politics of the situation. Whilst Z1A1A is operating with the approval of the Albanian PTT with a licence issued by the Albanian Radio Transmitter Society, the Hungarians (both groups) are operating with a licence issued by the Albanian Ministry of Sports, which authority, according to the Hungarians, has the power to issue a radio amateur licence.

It has to be noted that under the previous system in the Eastern European countries amateur radio was regarded as a sport and was attached either to the Ministry of Sports or under some other guise to the Ministry of Defence. It appears to me — and I may be totally wrong on this issue — that due to the somewhat confused political situation in Albania, both authorities have the power to issue such amateur licences. The necessary paperwork was submitted by both groups to the ARRL. To the query by the ARRL whether the Ministry of Sport has the power to issue such a licence, both Hungarian groups have submitted further documentation.

Such is life and amateur radio politics in this small country on the Adriatic coast in Europe. A decision by the ARRL is expected soon.

Incidentally, Z1A1A indicated it will work on all bands, including WARC, and intends to stay until the end of October. QSL for Z1A1A goes to: Quick Aid Foundation, PO Box 5, Komoro, H-4622, Hungary. Z1IHA intends to stay until the middle of October. QSL to: PO

Box 49, H-1311 Budapest, Hungary. Both groups accept voluntary donations.

Myanmar — XY0RR Vietnam — XV Spratly Is — 1S1RR

The Myanmar DXpedition of Romeo and his friends is now in the past. It appears the expedition has taken place, not on an island, but in the area of the Golden Triangle, which is the area between Myanmar, Thailand and Vietnam, and it is not the most peaceful part of that country. Only wire antennas were used, because putting up a log period antenna was "dangerous", according to the reports received in the US. Some of the expedition members had stomach upsets — they ate only once a day — and all the operators suffered from "battle fatigue". For whatever reason, they had to keep a low profile and the signals were not too strong. Activity was on all bands, and it was reported they made 50,000 contacts before they left on 11 September.

Where did they go from there? Home? You have guessed it correctly. They went to Vietnam and operated under the following call-signs: XV9MA (UA9MA), 3W3RR (UB5JRR — Romeo), XV3UU (RASAUU) and 3W/4K2OT. Activity was on 14195, 21295kHz SSB and on CW at the low end of the bands. Each operator gave directions independently for QSLing.

After a few days of Vietnam activity, the call-sign 1S1RR surfaced on the band from Spratly Islands. It was a four-day activity. Many who previously missed out working this island took the opportunity to work this still rare DX country. QSL goes to: Roman Stapanenko, PO Box 812, 1000 Sofia, Bulgaria.

Contrary to previous rumours, the mail is safe in that box, which is also used for the YA0RR, XY0RR and for the 1S1RR activity.

St Brandon Island — 3B7

St Brandon Island and Agalega Island — 3B6 are dependencies of Mauritius, and lie east of Madagascar and north of Mauritius in the Indian Ocean. Jack 3B8CF/3B7 was very active during September and in the first week of October. Due to work commitments, he preferred nets for SSB operations, but was quite active freestyle in CW on his preferred 21030kHz. He visited the "Anza" net (21205kHz) on more than one occasion, thus giving the opportunity for many VKs and ZLs for a rare DX contact. QSL direct to his home call: 3B8CF: Seewoosankar Mandary, Shastri Road, Candos, Quatre Bornes, Mauritius.

Vietnam Visit by US Amateurs

A six-man American team, many of them Vietnam veterans who speak the Vietnamese language, planning to travel to Saigon (Ho Chi Minh City) during November/December for a 10-day DXpedition. All of them are well

known DXers and contesters (Paul AA2AV, Dennis N6KI, Dennis WJ2R, Terry W6MKB, John AB6BH and Mike KM1R). The budget for this DXpedition is estimated to be in the vicinity of \$25,000, of which half will be met by the team members. ICOM America has lent HF equipment and linears, but they are looking for further donations to cover the balance of the costs. If you can spare a few dollars, why not send them to: AVDXT (American Vietnam DX Team) PO Box 875, Rahway, NJ 07065 USA.

Fraser Island — VK4

As a DXer, you often hear IOTA (Islands On The Air) numbers quoted on the air by those who decided to "collect" islands on the air for the respective awards. Fraser Island is listed in the international IOTA directory as one such of these islands, which qualifies for such an award. The first known radio amateur activity in recent times from the island was by Graeme VK3BYO, who worked portable from the island (IOTA OC-142) in July this year. His short activity created interest in this, the world's largest sand island.

A few weeks ago, Peter VK4AEI and his friend Bruce VK4NDW decided to have a quiet fishing trip on the island. They installed a portable HF radio set on their four-wheel-drive vehicle, probably to use it and to kill time when the fish were not biting. On 13 September, when calling for contacts, they innocently mentioned to the listening amateur fraternity that they were on Fraser Island. Suddenly the whole world wanted to work them. It took some time before they realised the subject of the great interest was not their very ordinary VK4 call-sign, but their locality.

The island itself lies immediately due east from the Queensland city of Maryborough, a few nautical miles off the coast and about 190km north of Brisbane. It is approximately 60km long and about 25km wide, narrowing to about 4km at some sections. It covers an area of 184,000 hectares of sand with extensive beaches, magnificent coloured sand cliffs, creeks and numerous freshwater lakes. There are a number of shipwrecks in the surrounding waters of the island.

The brig *Stirling Castle*, commanded by Captain James Fraser, sank in 1836 north of the island. Among the shipwrecked survivors who made their way to the island was the now-famous Eliza Fraser, wife of the stricken ship's captain. Her adventure brought worldwide notice to the peaceful island and eventually led to the area being renamed Fraser Island.

But, back now to amateur radio. To satisfy the demand for this IOTA island, the Hervey Bay Amateur Radio Club will activate the island using the club call-sign VK4CHB/portable from 1 November for 10 days. Judging by the success with the V14HBW special event station, it looks like they are on a winner this

time again. QSL to: Hervey Bay ARC, PO Box 829, Hervey Bay, Queensland 4655.

Up in the Icy North — VE8PW

If you are after the "Worked all Zones" award, you are probably aware of the fact that to secure a contact in Zone 2 is not an easy task. At the end of June this year, I was fortunate enough to have a short QSO with Peter VE8PW, and asked him what he is doing up north so far away from the settled parts of the Northwest Territories of Canada? His reply QSL card, noting that he is in Zone 2, arrived promptly with an interesting letter and photo. Let me share the contents of his letter with you.

"My QTH is located at 65°N and 98°W, in CQ Zone 2 in the middle of the barren lands, within the district of Keewatin, Northwest Territories, some 500 miles south of the magnetic pole. I am operating from a geophysical research station which is manned 6-8 months of the year, and of which I am the project manager," writes Peter.

"We live in trailer-type cabins and get our power from a 12kW diesel generator. On the average there are 20-25 people in the camp, and fortunately I am the only ham operator so I don't have to fight for air time. The closest settlement is a small Eskimo hamlet on an inlet from Hudson Bay, some 80 miles to the southeast. Access to this place is by air only, and we move around the area in helicopters. Food comes in once a week by ski or float plane. There is a wide variety of wildlife, from caribou to grizzly bear, which sometimes ventures right into the camp. Lots of birds, and fishing is excellent.

"HF operation from here is quite unique due to the geographical location.

"We are only 500 miles south of the magnetic pole so the recent sun-flares have played havoc with propagation this year. Permanently high winds and the permafrost ground which is constantly frozen down to 250m almost, forbid operation of larger HF beams and towers. I therefore prefer simple wire antennas. You don't have as strong signals as you might want, but at least it keeps you on the air. Under normal conditions VK and ZL are best between 1100 and 1400 UTC, and I can hear and work VK4OH in his net with good signals on many days. Best bands are 20m and 17m, with 15m on and off. My QSL info is via the callbook or the VE bureau, and I QSL 100 per cent. My antennas are dipoles for 20, 17 and 15m. In the camp here, we made a spotlight which is very much needed in the months of darkness, to show grizzly bears or caribou which sometimes like to hang around the shack door. Lost two coax cables to a curious bear already. My other equipment is quite simple, just a barefoot IC-735 and a tuner. Thanks again for your direct QSL which was my first VK2!" — concludes the letter

from Peter. His address is: VE8PW Peter Wollenberg, 125 Albertus Av, Toronto, MR4 L1J6, Canada.

Future DX Activity

- * Rumour has it that FR5AI will operate from Juan de Nova Island as FR5AI/J from 15 October to 28 November.
- * Swedish missionary Mats SMTBUA will return to Ecuador to continue his missionary work. He will be there for three years and is expected to be active as HC7SK. QSL to: SM6DYX.
- * Bing VK2BCH was still in Rotuma at the end of September operating as 3D2XV. However, expect him to be on Tuvalu after 8 October with the callsign of T20XV.
- * The injuries of monk Apollo SV2ASP/A on Mt Athos were healing much quicker than expected. He can be heard now on Zedans net, 14251kHz at around 0430 UTC.
- * Crozet Island is still active on 14020 CW around 1200 to 1300 UTC. Work him while you can, because Jean Claude returns to France at the end of November.
- * It was reported that FR5ZU/G is now on Glorioso Island. He will later proceed to Tromelin.
- * V63YL will be active from Micronesia for one year (IOTA OC-012). He is expected to be active on 14180, 14305, 21180 and 28375kHz. QSL direct only to: Jarl Lundstrom, PO Box 687, Yap Island, Federated States of Micronesia, 96943 via Hawaii.
- * Listen for Kermadec Island (IOTA OC-039). George ZL8GBS is a conservation officer and arrived at Raoul Island mid-September. He is a newly licensed operator, and it is said that he will not be very active, and he has not yet acquired the taste for DXing. So be patient when the pile-up occurs. QSL direct to this address: George B Simpson, Department of Conservation, Raoul Island, Overseas Mail Branch, CPO Auckland NZ.

Interesting QSOs and QSL Information

Note: callsign, name, frequency, mode, UTC, month

HC8GR Guido 14148-SSB-1056-Sep. QSL to: Guido E Rosillo Ojeda, Puerto Baquiro, Moreno, Isla San Cristobal, Galapagos, Ecuador.

JT1BV 14197-SSB-1135-Sep. QSL: via Bureau.

3B8FG Abid-14022-CW-1315-Sep. QSL to: Abid N Solim, 13 Napier Broome St, Beau Bassin, Mauritius.

ZS9S John-21205-SSB-0626-Sep. QSL to: PO Box 2480, Walvis Bay, Zip 9190, Republic of South Africa.

FT4YD Lorrain-14222-SSB-0704-Sep. QSL to: D Bruriaud, PO Box 1, F-71140 Vitry/Loire, France.

FW/F051W Stan-14208-SSB-1402-Sep. QSL to: Stan Wisniewski, Box 2139, Papeete, Tahiti.

4K1B-14006-CW-1245-Sep. QSL to: UV6AAP.

VK9YJ Peter-14015-CW-1109-Sep. QSL to: VK3AWY Peter James, Box 60, Lara, Victoria 3212.

CU2QN Luiz-14009-CW-0808-Sep. QSL via the Bureau.

ZK1QO Lars-North Cook-14200-SSB-0645-Sep. QSL to: SM5BOQ Lars Nordlund, Rankhusv 15, S-19630, Kungsen, Sweden.

T20WW Joe-14222-SSB-0750-Sep. QSL to: NW3W Joseph M Raynak, 2766 Colwood Dr, San Jose, CA 95148 USA.

C21BR Brian-14222-SSB-0557-Sep. QSL to: Box 478, Republic of Nauru, Central Pacific.

XU1NQ-21027-CW-0900-Aug. QSL to: Josef Kordac, Lounsky, 3, 888, CS-14000, Praha 4, Czechoslovakia.

A35TX-21022-CW-0600-Aug. QSL to: Tadashi Hashimoto, 40-7, Daigokuden, Kai Decho, Mukah, 617, Japan.

OH0MM-21024-CW-0900-Aug. QSL to: Vilho Hiiemaa, Rukuuntantie, 18A 21, SF-00330, Helsinki, Finland.

T10RHU-Hermes-21205-SSB-0533-July. QSL via the Bureau.

VP2MDL-Lawton-21205-SSB-0557. QSL to: KC4DWI B Kellam, Box 936, Cheriton, VA 23316 USA.

XV9MA-14195-SSB-1200. QSL to: UA9MA Gennady I Kolmakov, Box 341, 644099, Omsk, USSR.

RTTY News

Syd VK2SG sends me quite a long list of RTTY contacts each month. Here is a sample as it appears in print.

* 7Z1S-21074 at 1100Z. ARQ. QSL to: OE6EEG.

* HL9HH-14083 at 1245Z. QSL to: UB5QDF.

* TA7E-21075 at 1207 Z-ARQ. QSL to: Box 76 Trabzon, 6100 Turkey.

* 4K20IL-14088 at 0923z. QSL to: UA9MA.

* 9Y4VU-21085 at 1705Z. QSL to: W3EVW.

* 39TXC-21095 at 1755Z. QSL to: IK8QIZ.

* 9K2ZZ-21086 at 1418Z. QSL to: W8CNL.

* ST0DX-21084 at 1930Z. QSL to: WA2NHA.

* KC6DX-14082 at 1012Z. QSL to: JA2NVY.

From Here and There and Everywhere

* Les VK4DA was wondering whether a QSL card from St Barthelmy Island would count as a DXCC country? Due to political boundaries, cards with a FJ or FS prefix, whether from Barthelmy Island or from the French part of Saint Martin, count as one DXCC country, and a PJ5-8 card from the Dutch part of the same island, called Sint

Maarten, or from Saba Island and/or from Sint Eustatius island, count for another DX country.

- * HS0AC the station of the Radio Amateur Society of Thailand, is often on the air operated by various guest visiting amateurs. It can be worked usually around 1200 to 1300 UTC on both CW and SSB on 14MHz.
- * Are you confused about the Soviet 4K prefixes? Neil VK6NE gives the following explanation: 4K0 = drifting stations on ice floes. The following are situated all above the Arctic Circle: 4K2 = Franz Josef Land 4K3 = European islands; 4K4 = Asian islands.
- * Peter VK9YJ (VK3AWY) returned from his recent trip to Cocos/Keeling Island. He apologises for the delay in sending out cards for his first trip earlier this year, but he was and still is very busy in his profession, having spend only one month at home in the past six months. However, he promised that the March cards will be out soon.
- * The DXCC vote on the future DX status of Jarvis Island is expected to be handed down at the beginning of October.
- * Do not be surprised if Bangladesh will be

activated in the near future. Jim VK9NS is planning a few weeks activity in that country, and will go as soon as approval arrives from Dacca.

- * The 1100 UTC "Family Hour Net" on 14226, controlled by Gray VK4OH, had its 157th DX country check-in this year.
- * VK9WI appeared on the bands, claiming to be on Willis Island and giving Jim VK9NS as his QSL manager. When Jim rang Willis Island to make enquiries he discovered two things: that VK9WI is probably a pirate and no such amateur exists on Willis Island, but Willis Island, on the other hand, has a genuine licensed amateur in the person of Graham, with an unusual callsign of VK9GS. Home call VK3DSB. Unfortunately, Graham, who has been on the island for quite some time, is not a very active amateur, let alone a DXer. This is the reason why he remained unknown and hidden on this sunny island of the Coral Sea.
- * V16SR was a special event station operated by Tom VK6MK on 20m celebrating the discovery of Western Australia 200 years ago on 29 September 1791. Unfortunately, this news came too late to receive effective publicity. All VK radio amateur

clubs and individuals please note: Let me have the details of any special event station or planned activity as soon as the special callsign has been issued by DoTC.

QSLs Received

Note: W = week; M = month; Y = Year; FM = from; MGR = manager and his call; OP = operator and or callsign.

Direct cards: S79KMB (4W FM MGR KN2N), GW4JQQ (4W FM OP), 7P8EG (3M FM MGR KOJZM), ZK2XA & ZK2XB (7M FM MGR DJ1ND), VP8CGK (4M FM MGR VK4M2), HK0TU (10M FM MGR HK3DDK).

Bureau cards: OA40S (2Y FM OP), YV1CP (2Y 2M FM OP), 5N9NRK (1Y 8M FM MGR HB9WU), A41KJ (2Y 7M FM OP), TK5FF (1Y 9M FM OP), PJ2WOL (1Y 7M FM OP), WB3KBZ/VP9 (1Y 7M FM OP), WH6ASW/1M0 (2Y FM OP), IX1BGJ (1Y 9M FM OP), SV9/DL6RAI (11M FM OP).

Thank You ...

to all my helpers a big thank you, but specially to the following: VK2BEX, VK2CMV, VK2DID, VK2KFU, VK2QL, VK2SG, VK3DD, VK4DA, VK4OH, VK5WO, VK6NE, VK8KV, VK9NS, VE8PW, and the following publications: *QRZ DX*, *The DX Bulletin* and the *DX News Sheet*. Good DX and 73. ar

EMC REPORT

HANS RUCKERT VK2AOU - 25 BERRILLE RD, BEVERLY HILLS 2209

1. "Frequency-Bundle Net" for mobile and handheld commercial communication presents a serious threat to the 420-50MHz amateur band operation. This form of cellular radio telephone operation uses the following frequency bands: Netherlands 403-420MHz; Germany 410-430MHz; Bosch Co 450MHz; Motorola Co 403-433MHz and 438-470MHz. We know the Amateur Radio Service is the secondary user, permitted on a non-interference basis. We have to use very highly sensitive receivers and also quite strong transmitters (high ERP) to be able to use the OSCAR satellites. The highly directive high-gain antennas and the elevation often needed will reduce the danger of interference to the commercial as well as to the amateur service.

*Information from *Funkschau* magazine, Germany.

2. "Radio Communication" June 1991 (submitted by Norm Burton) brought again some helpful recommendations to overcome EMC problems caused by computers and monitors. When cables to be screened have fixed moulded plugs, which cannot be removed, a 70cm length of braid (from 12mm diam coax) can be wound around the cable, and along this braid a straight strip of braid (from 6mm diam coax) is held by insulating tape, to assure the shortest possible path for RF. It is often recommended that a ferrite choke be inserted as close as possible to the equipment. However, in this case, stray radiated RF would bypass the choke. Instead, the choke should be inserted some 30cm from the equipment.

The earth wires, connecting for example a

computer to the monitor, have too much RF resistance (inductive reactance) and they should be replaced by 10cm wide braid or foil strips.

3. Interference to and from cable TV operation using channel S-6, operating on the partly exclusive 144-148MHz amateur band. Tests were carried out with a manufactured "Searcher Plus" field-strength measuring receiver. This receiver has 2-200V/m and 20-2000V/m channel S-6 signals were received. In the city of Recklinghausen, Telecom-Germany informed the companies which installed cable-TV about the problem, asking them not to use low quality cables, connectors and plugs.

4. TVI and the Weather

It is not necessarily the radio amateur next door who causes severe interference to UHF-TV (channel 28) reception, like loss of colour, synchronisation and fluctuating snow. When the location of the TV receiver antenna does not present a "line of sight" condition to the TV-transmitter antenna, and only a stray signal is received over a hill, problems are likely at times. Air turbulence causing strong wind gusts, even without rain, can ruin the UHF-TV reception. No receiver re-tuning helps here. We know weather radar is being used to find cyclones, and jet planes similarly use radar to discover air turbulence areas to avoid flying suddenly into these, causing planes to drop suddenly several hundred metres. Our communication to relay stations and satellites could also be affected in this way.

A Call to all Holders of a Novice Licence

Now you have joined the ranks of amateur radio, why not extend your activities?

The Wireless Institute of Australia (N.S.W. Division) conducts a Bridging Correspondence Course for the AOCF and LAOCF Examinations.

Throughout the Course, your papers are checked and commented upon to lead you to a successful conclusion.

For further details write to:

The Course Supervisor
WJA
PO Box 1066
Parramatta NSW 2124
(109 Wigram Street, Parramatta)
Phone: (02) 689 2417

Ham to 2pm Monday to Friday
7 to 9pm Wednesday

REPEATER LINK

WILL MCGHIE VK6UU @ VK6BBS - 21 WATERLOO CRS, LESMURDIE 6076

Squelch Tails Two

Last month's Repeater Link contained the idea of a second Squelch to improve the action and over all sensitivity of your repeater's squelch.

This month I have included a simple block diagram to help in installing a second squelch. This particular block diagram is a copy of the addition to a Philips FM828. As receivers vary in their design, the specific circuit has not been included. If you would like the circuit design, let me know.

With reference to the block diagram, the top half is the existing receiver's squelch and the bottom half the added squelch. The emitter follower is to avoid downloading the existing squelch circuit. C1 can be reduced in value to produce a fast squelch closing on strong signals. C2 should be the standard value, that is the original value of C1. The Schmitt circuit switches at a level set by the squelch sensitivity. For the added circuit this around 0.5vp. T1 switches into circuit CD which adds the squelch delay to the main squelch.

Some experimenting with values is required, but you may like to adapt this idea to your repeater. The results when fitted to the FM828 produced a silent squelch on strong signals, with the ability to hang onto weak fluttery signals with no chopping.

Portable Repeaters

Have you ever been involved in setting up a portable repeater? It may have been for site evaluation or for emergency use. Whatever the reason, we have all shared something in common, and that is it can be fraught with problems.

De-sensing is the end result of a multitude of portable on-site problems. The duplexer is

one area, aerials another, and so the list goes on. All these problems can be solved, and I'm sure many amateurs have portable repeater systems that work well. When there is a problem with a portable repeater, it can be frustrating for those involved. A portable repeater is usually relied on, and when it does not perform, a large part of the communication system falters. Rather than battle on with mixed success, consider the following solution:

The problem for portable repeater systems can be solved by increasing the separation between the input and output frequencies. It is that simple. With 3MHz of separation the isolation required drops from 90dB to 60dB in round figures. The figure of 60dB is somewhat conservative, it depends on the repeater equipment in use.

The duplexer requirements drop by a large amount with such wide separation. Whereas

six cavities are usually required for 600 kHz spacing, a two-cavity filter will do the job. The saving in space and weight is considerable.

Split aerial systems with no cavity filters require as little as seven metres (25ft) vertical separation. Six hundred kHz spacing requires 30 metres (100 ft).

Many other options are now possible to eliminate de-sensing. Extra front-end tuned circuits and loaded cavity filters can be designed into the repeater. With 600kHz spacing, lumped tuned circuits and capacity loaded cavity filters have no effect - they are just not sharp enough.

Rather than go on, the end result with 3MHz spacing for portable repeaters results in top performance in half the size and a third of the weight.

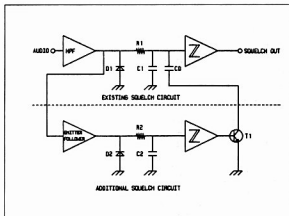
It is important to note that the 3MHz spacing is not for the existing repeater network, but an option for portable repeaters. Also there is no need to change portable 600kHz repeaters if they are working to their requirements.

Most synthesised (if not all) amateur transceivers have provision for odd ball splits.

Even crystal bound rigs would only have to be equipped with one or two extra channels. An allocation in the 2m band for two 3MHz split repeater channels is all that is required.

VK6 tried via the WIA convention a few years back to have two such channels allocated for this purpose, but it was rejected. No reasons were given why the Federal Councillors rejected the idea; maybe it is time to try again.

ar



SPOTLIGHT ON SWLING

ROBIN L HARWOOD VK7RH - 52 CONNAUGHT CRCS, WEST LAUNCESTON 7250

In the September column, I mentioned that Daylight Saving Time was going to be introduced on a common date throughout the country. Well, I'm afraid it was wishful thinking, for Tasmania went ahead and introduced it on Sunday 6 October, a full three weeks before the mainland states. It will also revert to Standard Time a full three weeks later, at the end of March 1991. At the time this was being compiled, Queensland was discussing the possibility of holding a referendum on Daylight Saving. Apparently there is some opposition to it from some quarters. Daylight Saving seems to work better in areas where there is a lengthy twilight period, eg in the

southern states.

Events within the USSR have seemingly stabilised and I haven't noticed any alterations as yet. Deutsche Welle is going to commence utilising former jamming senders within the Soviet Far East to relay its Asian programming. I have no details at present, but you will hear the ID of the site at the commencement of its transmissions, eg "This is Deutsche Welle Caribbean Relay, Antigua" or "This is Deutsche Welle Relay, Trincomalee". The German sites are always identified in that language. I expect that an English ID will be inserted at the commencement of the transmissions from Soviet sites.

The higher frequencies are providing some useful signals in our late evenings from Europe on the short path and North America on its short path. The 13m broadcasting allocation is jammed full of signals around 1200 hours UTC. I also suggest you listen higher, especially on the new 25MHz marine allocation, where several CW markers from Europe and North America can be heard. The 11m broadcasting allocation still has a few signals. Deutsche Welle is on 25740kHz in German and Radio Norway International/Radio Denmark is on 25730kHz. The only other reliable signal on this band is Dubai on 25690kHz in Arabic.

The World Administrative Radio Conference (WARC) is being held early next year in Barcelona. This will be possibly the most important conference, from the perspective of radio amateurs and broadcasters. Hams do

face challenges to their allocations, particularly on VHF and on 7MHz. There are pressures for some of the VHF/UHF spectrum from commercial users, who would like to take them over. Broadcasters also have been putting pressure on WARC for increased allocations in recent years. Yet recent political changes in Eastern Europe and the USSR, plus financial cutbacks within several broadcasters, has slightly dampened pressures for increased space. This WARC is also likely to be less contentious than previous conferences, because the Cold War confrontation between

East and West has ended.

Signals from an American religious station — WWCR in Nashville, Tennessee — are coming in well here. Although it is using 100kW, the signal is always well heard, because of the audio processing it uses. Recently they commenced using a second transmitter with separate programming. Although they primarily are broadcasting gospel programming, air time is also being hired by non-religious sponsors, eg travel companies, magazines etc. The primary sender is on 7520kHz from about 2300 till 1100Z, then

15690kHz between 1100 and 2300Z. The secondary sender is on 7420kHz + and 12120kHz +. The station emphasises its promos that it is on a clear channel.

Don't forget the broadcasters are going to make their alterations to their frequencies on the third of this month, to take account of propagational and seasonal alterations. This will be the last change for the year. The next alteration will be in March next year.

Well, that is all for this month. Until next time, the very best of listening and 73 — DE VK7RH. ar

POUNDING BRASS

GILBERT GRIFFITH VK3CQ - 7 CHURCH ST BRIGHT 3741

Pounding Brass

This year I was sincerely hoping to compete in the RD Contest, especially as I was sent a special computer program written for the RD Contest itself by Geoff VK3VR. The only problem was that I ran out of time and managed to work only the last hour of the contest. This was definitely not enough time to learn the right keys to operate the program, which actually does most of the work for you, including, among other things, sending "canned" replies.

Basically, the program requires that you tell it which mode you are working in, which band, and the station's callsign you are contacting. If you have set everything up properly, the program then checks the entered callsign for duplication, logs it against a QSO number, and sends that number to him. You then enter the number he sends you and the program logs it and replies with a sign-off "canned" reply. The program keeps track of the time and logs that as well, so there is no writing required at all, and no need to touch the key. All entries are logged direct to disk, so if there is a power failure or you switch off the computer for any reason, you can pick up exactly where you left off without losing any of your log.

At the end of the contest, another part of the program sorts everything out and prints a complete log including a front sheet or summary sheet. It is all very swish. Just make sure you get plenty of practice before the contest, as it is difficult to set things up during the contest if you are not happy with the way you have configured things.

Geoff has made his program available through Public Domain sources, which means you can get a copy almost anywhere. As with Gary Bold's Morse programs, I am prepared to distribute this one as well, but, owing to the increased costs of everything, I think \$10 is more appropriate to cover disk, formatting, copying, packaging, postage and time. If you agree, please write to me with details of which format you want, (5.25" 360k or 1.2m

floppy disk for IBM) and I will send you the program. If you don't agree then you can chase it up yourself! The same goes for Gary's Morse programs, of which I have sent out over 50 copies.

I have to admit that I have not given enough time to using a computer in the shack, so I am still not happy using one, although I am happy enough competing in the shorter "scrambles" run by the QRP Club, the next of which is scheduled for Thursday 14 November at 1000-1200 UTC on 80 metres from 3.501-3.529MHz. You just missed the 40m scramble on 15 October, but I only learned about that one just before writing this article. The previous 40m scramble was held on July and only eight logs were received. This is very disappointing, even for two hours, so if you decide to spend two hours of fun in the 80m scramble, don't forget to send in your log.

Rules: CW only, club members 5W max to ant, call CQ QRPTEST, scoring QRO VK one point, QRP VK five points, QRO DX five points, QRP DX 15 points. Further information is available from Ian Goddard VK3DID, 25 Monaco St, Parkdale, 3194. Send your logs to Ian too.

My only QRP rig is home-brewed for 80 metres so I modified my IC751A to operate down to five watts; it has a much better receiver (than anything!) so the mod is well worthwhile. Check your rig's manual, it's usually as easy as turning a trim-pot down while watching the meters.

QRP Club CW net for daylight saving time is 0830 UTC on Tuesday nights between 7031 and 7035kHz.

Other nets are:- SSB/QRO Thurs 1030Z 7080kHz

SSB/QRO Fri 0900Z 3620kHz (daylight saving)

SSB/QRO Fri 1000Z 3620kHz (normal)
CW/QRP Tues 0945Z 3529kHz (non-daylight saving)

All QRP Club information is from Lo-Key #31 The Journal of the CW Operators QRP Club.

Membership info from Kevin Zeitz, VK5AKZ, 41 Tobruk Ave, St Mary's 5042.

You may remember my reference to deaf people and the way in which Morse code could help them to communicate with others via radio.

Peter Phillips writes;

..... Regarding Morse for the totally deaf - I recently made up one of Tom Moffat's VK7TM Listening Post II, Fax/RTTY/Morse decoders (page 80 EA January 1991). This unit comprises hardware/software to interface selected audio signals from a transceiver and display Fax/RTTY/Morse reception on an IBM PC screen. The front-end hardware of this device consists of an XR2211 PLL FSK decoder which locks on to the received audio and decodes FSK. Lock-on is indicated by an LED which also flashes on and off to follow received Morse. Hence, this is one proven method of reliably decoding Morse into a flashing light. It should be possible to extend the ability of the Listening Post to receive hand Morse with reasonable accuracy under moderate QRM/ORN conditions.

Incidentally, since transmitted Morse may also be displayed visually on the LED and PC screen by decoding of the transceiver's monitor tone, this device would be an excellent Morse practice/monitor aid for the totally deaf. In conclusion, I feel that a device such as the Listening Post II could be of great benefit for the totally deaf to receive Morse and achieve contacts in conjunction with the complementary pleasure of hand sending."

Any ideas in this vein will be much appreciated.

I have heard that instead of signing 73s while working QRP the preferred option is 72s instead. The submission to use "72" to mean "Good QRPing" came from the G-QRP Club and was supported by the QRP CW Ops Club. Let's try it!

73 AND 72
GIL VK3CQ

**Support the WIA in order
to protect amateur radio
frequencies
at WARC-92**

Date	Time UTC	Frequency in MHz 'M' or 'E'	Call sign if Heard	Mode	RST	Logs X	Details of Traffic if Known and any other Information
260891	1501	7004.8	-	A3E	S8	S	panish b/cast
140891 (VK6BGF)	1420	7010	R/pak	??	S9+		Radio Pakistan Islamabad
240891	1235	7018	-	J3E	S4		Asian b/cast 2-way tlc
250891	1232	7096	-	A3E	S4		B/c Islamic phrases recognised
090991	1232	7080	-	A3E	S5	2	B/caster music
080891	1047	14019	-	A3E	S4		Foreign language b/cast
210791	0650	14023.5	-	F1B	S4-5	75	250Hz with RYs USSR
210791	1200	14044+	-	Mxd	S4-6	61	Rad teleph duplex J3E 24hr stn
130891	1120+	14052	-	PON	S6		OTHR "motor-boat" 26cps Nav Stn
2907	1110	14056	Several c/signs TR2A/HD2Q/4WPU/AWB0				
210791	mni	14058+	-	A2	S5-7	57	24hr/unstable freq to 14063
030891	mni	14070	VRQ	A1A	S9	17	Vietnam 51r code/ VBX
030891	mni	14075	VRQ	A1A	S9+	54	Vietnam text
030891	mni	14080	VRQ	A1A	3		Also KFB on same freq
140891	mni	14095	VPC	A1A		17	NPO also on freq
050891	0930	14103+	NZB	A1A		10	ZBK de NZB QSV K
160891	0855	14140.5	UMS	mxd		4	Moscow naval radio USSR
210791	1150	14170.5	UMS	A1A		67	24hr stn USSR ID in CW
310791	0755	14176	5PP	A1A		12	Also UID80
220791	0910	14211.5	-	F1B		34	2ch NOT F7B either ch 250Hz
300791	0905	14217.5	UMS	F1B		32	18hr stn USSR 60% tlc + A1A
070891	1216	18075		A3E		4	Ch B/c (or Viet) talk & music
250791	0400+	21115/20	CDS	A1A		38	P7A is identical in ALL respects
050891	0740	21334.5		F1B		5	24hr stn located Europe 250Hz
210791	1150	21347.5		F1B		24	18hr stn. Target area not Pacific
240891	0800	21355	Rad Mosc	A3E	S9+	40	+F3 USSR spurii of 21505
030891	1127	28455		A3E	S7		B/cChin music & talk

28515/28575 Russian b/casters, also many PON OTHR stations, also on 21MHz.
My thanks this month to VKs 4BG, 40D, 4AKX, 4BHJ, 4BTW, 4BXC, 4EKA, 5TL, 6R0, 6XW and 6BGF. Late arrivals
will be credited next month.

INTRUDER WATCH

GORDON LOVEDAY VK4KAL
AVIEMORE, RUBYVALE 4702

It is quite some time since the "motor-boat" station has been logged to any extent; however, it has cropped up on both 18.030 and 14.052.5MHz recently. The rate is about five pulses per second on the 14.052.5 frequency, the centre of two tones ... found only after using two filters! It is now believed to be a navigational station of the USSR; the .5 in frequency + 250Hz separation is a "giveaway" to the country of origin. But why use the amateur bands for this type of operation? Beats me! The filters required to split the signal being (1) using transceiver CW filter of 500Hz and audio filter (2) Remember when logging, this is mode PON. It can also run at 26cps! Band condx for August have been fair to poor on 14 and 21MHz, 28 being swamped by non-amateur stations within our own country, by illegal use of cheap 28MHz amateur transceivers, readily available at present. We must all act to stamp this out; your DoTC is all ears.

AR

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KNUTSHELL KNOWLEDGE

GRAHAM THORNTON VK3IY

A brief overview of what other magazines have to say. The information given below has been supplied to the WIA free of charge by Thornton Publishing. Your divisional library may have copies of the references quoted.

Antennas

ATUs

MFJ-948 'Deluxe Versa Tuner II' Antenna Tuner. (Product Review) Mark Wilson AA2Z, *QST* vol LXXV No 8 Aug 1991 pp 36-37. A report is given for this ATU, including some measurements.

Magnetic

Loop Antennas - Facts, Not Fiction (1). A J Henk G4XVF, *RadCom* vol 67 No 9 Sept 1991 pp 51-53. il cts, diag and graphs. A detailed dissertation is given on the performance criteria of loop antennas used for transmitting and receiving. Methods of coupling are discussed, and the calculation of radiation resistance is considered in depth. An equation for radiation resistance of a loop is given:

$$R_r = 320\pi^2 \left(\frac{A}{\lambda^2} \right)^2 N^2 \cos^2 \theta$$

where A equals the area of the loop in the same units as wavelength, and N is the number of turns in the loop.

Loop Antennas - Facts, Not Fiction (2). A J Henk G4XVF, *RadCom* vol 67 No 10 Oct 1991 pp 47-50. il graphs. A general discussion is given on the calculation of inductance, efficiency and capacitor voltage of single turn loops. The graphs shown simplify calculation. (See also p 30 and p 39 of the same issue for further discussion of magnetic loop antennas.)

Miscellaneous

AM/FM Car Radio Antenna. Ross Danneker, *EA* vol 53 No 9 Sept 1991 p 66. il cct. A circuit is given which allows a Yagi VHF and a long wire MF antenna to be simultaneously connected to the input of a car radio, for household use.

RFD-1 and RFD-2: Resonant Feed-Line Dipoles. James E Taylor W2OZH, *QST* vol LXXV No 8 Aug 1991 pp 24-27. The outer conductor of the last quarter wave of the coax feeder is used as half of the dipole antenna. A multi-turn loop in the coax defines the end of its radiating portion. Resonance of the antenna can be achieved by winding cable on and off the loop, adjusting its position from the antenna end. A two band version can be applied by using a similar loop in the other antenna half at the higher frequency (RFD-2).

Multiband

All-Band Beam Antennas. Les Moxon G6XN, *RadCom* vol 67 No 8 Aug 1991 pp 49-53. il cts, diags and graphs. A detailed

analysis is given of the multiband performance of quads and three geometric variants of the delta loop. The variation of radiation resistance and front to side ratio with frequency is considered in detail. Open wire feeders are advocated both for the driven element, and as a means of tuning the reflector from the shack. This arrangement allows the beam to be reversed, simplifying rotation problems.

VHF/UHF

Low Cost Discone Antenna. Phil Salas AD5X, 73 issue #371 Aug 1991 pp 24 and 26. il diags. A design is given for a discone antenna which covers from 144 to 1296 MHz. Welding rods are used as the conductors.

ATV

Una 23-24 GaAsFET Pre-amp. (Product Review) Mike Wooding G6IQM, *RadCom* vol 67 No 9 Sept 1991 pp 47-48. il graphs. A description and test report of this ultra low noise pre-amplifier is given.

Audio

Rewinding Audio Coupling Transformers. Peter Lankshear, *EA* vol 53 No 9 Sept 1991 pp 86-89. A technique is described whereby audio transformers can be rewound for the restoration of vintage radios.

Speech Processor for Transceivers. Rob Evans, *EA* vol 53 No 9 Sept 1991 pp 72-77. il cts, cmp, diag, graph, pcb and photos. A photocopied LED/LDR combination is used to give compression of dynamic range. Illumination of another LED indicates that compression is taking place. A delay circuit on the PTT release enables a brief beep to sound, signifying the end of an over.

Computers

High Speed Data Acquisition. Mike Gray N8KDD, 73 issue #371 Aug 1991 pp 28-30. il cct, cmp, graph, pcb and photos. An A-D converter is described which reads digital equivalents of analogue inputs to the parallel port. Software is available from the author.

Universal CAT Interface. (CAT = Computer Accessed Transceiver.) Art Harding K5YEF, 73 issue #371 Aug 1991 pp 38, 40, 42-45. il cts, graphs and photos. Several circuits are offered to gain computer control of a transceiver microprocessor. Communication is via the RS-232 serial port, and the TTL interface of the transceiver. A BASIC listing is included as a control program.

Using Your PC to Control Radio Gear (1). Tom Moffat VK3TM, *EA* vol 53 No 9 Sept 1991 pp 92-96. il Photos. The serial port connection of a computer to an Icom AR3000 receiver is described. Basic programs are included to provide control and readout functions.

Electronic Devices

An Infrared Keyer Interface. John Conklin WD00, *QST* vol LXXV No 8 Aug 1991 pp 33-35. il cts and photos. An infrared beam, modulated at 40 kHz, is used to key the transmitter as a substitute for the usual hard wiring.

Safe and Simple Helium-Neon Laser. Peter Phillips, *EA* vol 53 No 9 Sept 1991 pp 60-64. il cts, cmp, pcb and photos. Design and construction details are given for a 0.8mW He-Ne laser. A laser engine with rotating mirrors for the production of special displays is also described.

Experimenting with Electronics (2) Flashing LEDs. Peter Murtach, *EA* vol 53 No 9 Sept 1991 p 97-99. il cct, cmp, pcb and photos. A description is given of an astable multivibrator which alternately flashes two LEDs.

Filters

An Audio CW Notch Filter for Home Brewing. Yoshiharu Mita JX1XEO, *QEX* No 115 Sept 1991 pp 4-7. il cts, graphs and photos. The design of an audio filter is given which can be used either as a notch or peak filter. Notch depth is 55 dB. The Q for the notch may be adjusted from 4 to 14; the peaker has a fixed Q of 16. Optocoupled LEDs and Cds LDRs are used to control the resonant frequency.

Narrow Band Modes

The Kantronics KTU Telemetry Unit with Weathermode EPROM. (Product Review) Dick Goodman WA3USG, 73 issue #371 Aug 1991 pp 46 and 48. A commercial device is reviewed which is capable of sending remote weather data via packet. The equipment is available from Kantronics, 1202 E 23rd St, Lawrence KS 66046 USA. Prices are about \$300 for the KTU, \$110 for an anemometer and \$90 for a rain gauge.

The TAPR METCON-1 Kit. (Product Review) Bill Brown WB8ELK, 73 issue #371 Aug 1991 pp 34 and 36. il photos. A kit is described which provides remote control or telemetry via packet. The kit is available from Tucson Amateur Packet Radio (TAPR), PO Box 12925, Tucson AZ 85732-2925 USA. Prices are around \$85 for the main board, \$25 for the V-to-F converter and \$30 for the temperature board.

Pkt-GOLD Multimode. (Product Review) Marc Stern WA1R, 73 issue #371 Aug 1991 pp 20 and 22. il photos. The application of this software is reviewed. The program is available from InterFlex Systems Design Corp, PO Box 6418, Laguna Niguel CA 92607-6418 USA for around \$60.

Poor Man's Packet. F Kevin Feeney WB2EMS and Andy Payne N8KEI, 73 issue #371 Aug 1991 pp 8, 10, 12 and 14. il cts, cmps, pcbs and photos. A simple modem interface is described that allows an IBM PC compatible to be used for simple packet without a TNC. The software substitutes for the normal TNC

functions; it is not described, but is available separately from the authors.

Power supplies

The Pulse Charger. Mike Bryce WB8VGR, 73 issue #371 Aug 1991 pp 52-53. il cct, cmp, pcb and photos. A 555 timer provides duty cycle charging, allowing time for cell cooling. The unit was designed primarily for use with Gel/Cell™ batteries, but may also be applied to NiCads.

First Steps in Home Construction (4). John Case GW4HWR, *RadCom* vol 67 No 8 Aug 1991 pp 41, 43. This section describes how to connect up and test the transformer. A discussion is given on the identification and testing of resistors and capacitors.

First Steps in Home Construction (5). John Case GW3HWR, *RadCom* vol 67 No 9 Sept 1991 pp 36-37. il cmp, diag, pcb and photos. This article gives the construction details for the printed circuit board used in this project.

First Steps in Home Construction (6). John Case GW3HWR, *RadCom* vol 67 No 10 Oct 1991 pp 42-44. il cct, diag and photo. The concluding article describes the finishing touches and testing of the power supply. A technique for fault finding is given.

12V Battery Regulator. Steve Garland, EA vol 53 No 9 Sept 1991 p 67. il cct. A Motorola MC34063 DC-DC converter is arranged to provide 12V output, independent of the state of charge of the source 12V battery. An output up to 60mA is obtained.

Receivers

SSB Receiver for the 80m Amateur Band (1). Leon Williams VK2DOB, EA vol 53 No 9 Sept 1991 pp 100-104. il ccts and photos. A receiver is described which uses 8 MHz crystal filter and varactor tuning. Maximum use is made of ICs, and the receiver tunes from 3.5 to 3.7 MHz.

Technology

EME

Measuring the Mass of the Earth: The Ultimate Moonbounce Experiment. H

Paul Shuch N6TX, QEX No 115 Sept 1991 pp 8-10. Knowledge of the earth's radius and the period of the moon's rotation about the earth, combined with measurement of the earth-moon distance, is sufficient information to calculate the mass of the earth. The result obtained was 6.037×10^{24} kg. This was derived from an echo time of 2.55 seconds.

Miscellaneous

Crystal Oven. Bob Parker, EA vol 53 No 9 Sept 1991 p 67. il cct and diag. A crystal and other components are housed inside a foam lined 35mm film canister. A BC178 thermally strapped to the crystal acts as a temperature sensor. A 56 resistor in contact with the crystal, provides heat.

Getting Started in Foxhunting. Manfred Zielinsky VE3ZIE, *QSTVE* Sept 1991 pp 3-4. il diag. A discussion is given on the techniques used for foxhunting. The guidelines within which such events are conducted are described.

Tuned FM Demodulators. Bryan Maher, EA vol 53 No 9 Sept 1991 pp 35-37. il cct and vector diag. A detailed analysis is given of the behaviour of the ratio detector and the Foster-Seely circuit, with comparisons between both.

What Your Frequency Display Really Tells You. David Newkirk WJ1Z, *QST* vol LXXV No 8 Aug 1991 pp 28-32. il graphs. A dissertation of the bandwidth of various signals is given. The true meaning of frequency readout is discussed. The margins necessary to avoid exceeding the band limits are given.

Test Equipment

High-Resolution LF Adaptor for Counters. W Liu, EA vol 53 No 9 Sept 1991 p 66. il cct. A circuit is described which gives an exact hundred-fold multiple of the input frequency, allowing frequency counters to be used below their rated frequency.

Transceivers

Home Brew

A High-Performance Easy-to-Build 432 MHz Transverter (1). Ed Krome KA9LNV, *QST* vol LXXV No 8 Aug 1991 pp 19-23. il ccts

and photos. 10mW output on 70cm is obtained from 1mW input at 28 MHz, with similar receiving conversion. MMIC chips are used in this design. It is designed for independent send and receive feedlines.

Miniature 80 Metre SSB Transceiver (3). Mike Grierson G3TSO, *RadCom* vol 67 No 8 Aug 1991 pp 33-35. il ccts, cmp and pcb. This concluding part gives construction details and alignment procedure.

Sideband Can Be Simple. Steve Price G4BWE, *RadCom* vol 67 No 9 Sept 1991 pp 41-45. il ccts and photo. A general dissertation on the design philosophy for simple mono band SSB rigs is given, together with a specific design for a 7 MHz 5W transceiver. Scaling factors can be used for application to other bands.

Product Reviews

Icom's IC-24AT: A Technical Review. Lew Whitbourn VK2ZIP, EA vol 53 No 9 Sept 1991 pp 82-85, 89. il graphs. A review of this 2m/70cm transceiver is given including measurements.

TS-850S Kenwood HF Transceiver. Peter Hart G3SJK, *RadCom* vol 67 No 10 October 1991 pp 35-37. il graphs and photos. An evaluation is given, complete with measurements, for this transceiver.

Glossary of Abbreviations

il The article contains illustrations, a list of which follows.

- cct A circuit diagram
- cmp A component layout drawing
- EA Electronics Australia
- diag A mechanical drawing
- pcb A master drawing from which printed circuits may be produced
- QSTVE QST Canada
- RadCom Radio Communication
- RadZS Radio ZS
- 73 73 Amateur Radio Today

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DIVISIONAL NOTES

VK2 NOTES

TIM MILLS VK2ZTM

Broadcasts

A reminder to those who submit copy to the Divisional broadcasts. Deadline is 6pm Friday by all methods. Mail to PO Box 1066, Parramatta 2124 in time for Friday collection; fax to (02) 633 1525; packet via VK2RWI on 4850. When preparing copy, use an A4 format, wide margin on the left and double spaced. Write in the third person. If the item

is for more than one week, provide additional copy which should differ slightly. While you may like the same thing repeated, it loses its impact if the listener keeps hearing the same thing. Please consider the broadcast officer who has to put it all together, and make his life easy.

The final live broadcast for the year will be on 22 December and resumes on 12 January 1992. VK2WI will, however, be on air during the break with a recorded segment.

The new antennas have been installed on the 23cm repeater at Dural. A donation from the Dick Smith Electronics organisation,

which has been very supportive to this repeater project with its previous donations. The present tower at Dural has become quite an antenna farm, with many antennas being raised to try to see over the tree line. Perhaps we should take to watering it to make it grow, unless we can get the trees to stop growing. Tree height has reached 20 metres and leaves only 10 metres of the tower in the clear.

Divisional

There will be no increase in the Divisional component of the 1992 membership fee. Divisional Council decided at the September meeting. It is pleasing to see a steady intake of new members throughout the years, and the retention rate of membership has been

good in these difficult times.

The next and final Trash and Treasure for the year will be on Sunday afternoon 24 November. A list of items has recently been compiled and may be obtained by sending a stamped addressed envelope to the office. Included in the list are some further "grab bags", Mocom 70s — a UHF two-way which has a PA stage which can be used on 2m. There are a few roller inductors which might suit that tuner project (limit two). Also, ask for a Bookshop list.

Happenings

The Gladesville/AUSSAT test was not conducted in September, as the transponder was not available for the time slot. There is a firm booking, however, for the end of this month, the 27th. Reminders via Divisional broadcasts... Gosford field day is getting near — February 1992 — those requiring stall/table space should lodge request with the Field Committee ASAP... Advise any Call-book corrections, including repeater listing, to the Divisional office.

New Members

The following recently joined the VK2 Division, and a warm welcome is extended to them.

B C	Andrews	VK2MFT	Grafton
R W	Arnold	Assoc	Gymes
R M	Berrell	VK2XRB	Springwood
J P	Bray	Assoc	Narrimone
B E P	Gammage	VK2JBG	Fairfield Heights
H	Gause	VK2MTV	Barnesley
M	Hazell	Assoc	Narrawana
R M	Hynes	VK2GHB	Avalon Beach
W S	Johnstone	Assoc	Strathfield
V D	Lane	VK2VLD	Epping
L A	McKenzie	VK2ZLU	New Lambton
M	Mihalovic	VK2AZH	Smithfield
A	Pollock	VK2FZ	Bondi Junction

HF Predictions

We regret the temporary absence of this feature

CLUB CORNER

The Mackay Amateur Radio Association Inc

We advise current information re the Mackay Amateur Radio Association Inc (previously the Mackay Amateur Radio Club).

Meetings — activities evening first Friday each month, 1930K at the SES Building, Swain St, North Mackay.

Club Net — VK4WIM/P Friday 2000K, 147000 repeater. Eighty-metre net has been suspended for some time, but may be re-introduced later in 1991.

5/8 WAVE

ROWLAND BRUCE VK5OU

Where does all the time go to? I've just arrived back in Adelaide from a conference in Sydney, and less than a week later I'm about to leave for Melbourne en route to another conference. My October AR arrives and I see I have missed the deadline. The fact that you are reading this, assuming indeed that it is here TO read, and being here, someone is bothering to read it, means the deadline has been extended. Sounds rather like the philosophical discussion on "How can you prove you exist?" Cogito ergo sum. Good, that has filled some space. Hurry back to your typewriter, Jenny, all is waiting for you.

Work prevented me from attending the September meeting, but I am assured there was an excellent presentation on JOTA and the Aussat link. Thank you Trevor Quick VK5ATQ, Bruce Mayberry and Peter Koen.

And that is a crafty way of getting into a new subject. Peter Koen is one of those who was successful in the recent batch of exams. Congratulations to the following achievers: (R=Rega. A=AOPC, N=NAOPC, 10R 10S 5R 5S = Morse rec/send)

Brian Barrow (R, 10R, 5R, 5S), Peter Burke (R,A,N), Robert Burns (5R), Peter Cockburn (A), Roy Cummings (R, N, 5R, 5S), Mark George (R,A), John Highman (R), David Hunt (R), Peter Koen (N), Lee McDonald (R,A), Ben Bengel (10R), Edward Mertens (10R, 10S, 5R), Darin Roberts (R,A), Antonius van Lyssdonk (A), Leonardus Vette (10R, 10S), William Vogel (A, 10S), Brenton Vowles (10R) and Dean Whitehorn (R,A,N). The high pass rate in the theory papers reflects, I believe, the excellence of our tutors. Well done!

Finally, an advance notice of the Christmas get-together which will be held in the Woodville Community Hall, Woodville on Tuesday 10 December. An evening to come with your XYL/OM and chat, celebrate and, I hope, hear an interesting speaker. Details are not finished, but if Peter VK5PRM is able to deliver the man we want, it will be a talk not to be missed.

VK6 NOTES

HARRY ATKINSON VK6WZ

Officials responsible for the West Australian section of Rally Australia were full of praise for the work of WICEN volunteer operators. During the four-day, 2000km event, radio operators from car clubs, the State Emergency Service and forestry authorities, plus WICEN members, used something like 200 transceivers on HF, VHF and UHF, on the ground, at race headquarters, in vehicles — even aircraft mobile. FM, SSB and packet modes were utilised in a total of eight distinct systems. These catered for command, stage safety, results, special services, spectator and media information requirements.

Packet, first introduced in the 1990 Rally Australia by WICEN, was again used — this year covering 10 stages as against the two last year.

European car crews competing for the first time were astonished that the radio communication system consistently got stage results to headquarters within one minute and a new printout from the computer within three minutes. Those crews who were old hands at the game had been aware in past years of the speed of the system — it was first introduced four years ago. The highlight for competitors was the fax of the printout available at a field results station 5km down the track waiting for each crew to seize on the way out!

Graham Byass, a race official and holder of the call VK6BY, and therefore "with a foot in both camps" went public with commendation of WICEN's part in the very complicated but extremely efficient communications system.

By the time you read these notes, special events stations marking two important occasions, the fourth Gladesville test, the VK-ZL-Oceania 'test, a QRP CW exercise and JOTA will all be behind us; October certainly was a busy month! By now, also, the NCRG's popular Hamfest will have come and gone (3 November) and doubtless will have been the success the hard-working northern corridor lads and lasses richly deserve.

ar

Club Repeaters — 2m

Voice —	VK4RMK	tx	147000
		rx	146400
Packet —	VK4RMK		144900
Packet —	VK4RZM		144900

		70cm	
Voice —	VK4RMU	tx	438125
		rx	433425

HASL 320m ERP 25W

Good coverage Mackay area
Same locn/pwr as voice rpt
Loc 30km ENE of Nebo HSAL
800m ERP 25W (links
Mackay/Central Highlands, thence
Rockhampton and south)

HASL 40m ERP 75W

H Pol beaming ntb/sth from
Andergrove (North Mackay)

WARWICK LAKE VK4AP

(TREASURER, FOR SECRETARY) PO Box 1065 MACKAY 4740 ar

QSLs from the WIA Collection

KEN MATCHETT VK3TL HON CURATOR, WIA QSL COLLECTION

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Zimbabwe — Formerly Southern Rhodesia

Bounded by Zambia (formerly Northern Rhodesia) to the north, Mozambique to the east, by South Africa to the south and Botswana to the west, this land-locked country has an area of about 400,000 sq km or roughly half the area of NSW. The country lies on a gigantic plateau of central South Africa and is noted for its wildlife and scenery. The name Zimbabwe is actually the place name of a site of massive ruins of a former civilisation dating back to the third century. It is said that Zimbabwe inspired the author, Rider Haggard to write some of his adventure books based on lost treasures of the area.

The white population is outnumbered about 20 to 1 by the indigenous peoples. These are the Mashona and the Matabele, who are the descendants of the early civilisation that built the impressive archeological buildings "Great Zimbabwe". In 1837 the Mashona (who were mainly a pastoral community) were conquered by the army of the Matabele, a warlike Zulu group. They established a military despotism but were eventually conquered in 1893 by emissaries of Cecil Rhodes, the most powerful man in Africa. His many bequests include the Rhodes scholarships. Three years later in 1896 Mashonaland (as the country was then called) was renamed Rhodesia after Rhodes.

Southern Rhodesia became a country in its own right in 1911 when the territory was divided into Southern Rhodesia and Northern Rhodesia. A government was established in 1923 and although technically a colony, Southern Rhodesia was to all intents and purposes a dominion which enjoyed virtual self-government by its white minority.

3SR

This early Rhodesian QSL was received by that remarkable DXer Alan Hutchings of

Callawadda, Victoria, who held the call OA3HL. The earliest QSL cards from about 1924 to 1927 did not carry any prefixes. The Rhodesian 3SR card is such an example. Operators were obliged to indicate the name of their country as well as giving their call-sign, since 3SR could be a station in Rhodesia or any other country. The card is dated for a QSO in November 1927. Actually, from 1 February 1927 a new system of station call signs came into practice but some stations, like Rhodesia 3SR, were a little tardy in adapting to the change. The Australian station OA3HL did conform. This new system introduced what were to become known as "intermediates". These consisted of two letters, the first one indicating the continent, the second, the particular country. For example, Australian stations carried the intermediate OA (O=Oceania, A=Australia). The Rhodesian station should have used FO (F=Africa, O=Union of South Africa, Northern and Southern Rhodesia, Bechuanaland and South Western Africa). Why the name "Intermediate"? An earlier development in calling procedure was to join two stations (the station called and the station calling) with a code which indicated the continent and the country, e.g. OA, FO. Thus if Rhodesia was calling Australia, the call would be 3HL oaf 3SR, the code "oaf" (written originally in lower case) being called the "intermediate" since it joined the calls of the two stations. Later the intermediate became an integral part of the call itself eg OA3HL, the new intermediate then becoming the word "de" (from) eg OA3HL de FO3SR.

The old Rhodesian 3SR card gives the signal report as QRK R5 with CW note of DC quality (ie no ripples or modulation). The QRK stood for "How do you receive me?" or "I receive you ..." The Rhodesian station's oscillator was the very popular Hartley circuit LC (loosely coupled).

ZE7JY

From 1 January 1929 new prefixes were allocated to all countries which were previously using intermediates. Northern Rhodesia was allocated VQ but Southern Rhodesia did not appear in early country listings. Readers should not wonder at such omissions. The period of the late 1920s and early 1930s saw a great number of changes and alterations to allocated call prefixes and it was not until the mid 1930s that the situation settled down to some semblance of order. The ZE7JY card was received by SWL Eric Trebilcock (now an SK) from an XYL operator, Mrs Marjorie Shepard for a transmission dated October 1957. The QTH was Salisbury, the capital city. The ZE prefix was derived initially from the prefix block ZBA-ZHZ assigned to "British colonies and protectorates" set down in the 1930 edition of the *Radio Amateur's Handbook*. It first appeared in country listings in 1932 as ZE1.

Z27JAM

Pressure from the black majority for recognition increased rapidly after the end of World War II, but there was strong resistance from the right-wing-dominated government whose attitude towards the indigenous peoples was little more than paternal. The white population also wanted a greater degree of independence from Great Britain, the situation coming to a head in November 1965, when the new Premier, Ian Smith declared independence unilaterally. Hoping for a fall in the Smith regime, Britain imposed a total embargo on trade with Rhodesia a month or so after this Declaration. The British PM at the time, Harold Wilson, dismissed the proposal to use force, although many African states supported the move, principally because there was no guarantee of black majority rule. There followed a long period of internal strife, independence finally coming on 18 April 1980 under PM Robert Mugabe.

The name Zimbabwe for the country dates from 1979, and this started to replace the name Rhodesia in country listings and QSL cards in 1980, but the ZE prefix remained. The present Z2 prefix (from the ITU-allocated

ZE7JY

Southern Rhodesia



ASO All Continents
E. L. JEPHCOTT, G.P.O. Salisbury, Southern Rhodesia.

S.A.R.L. Salisbury *Dec 27th* 1927
 To Radio Sta. *OA 3AL*
 Your Signals *HRD* at *1245* G.M.T. *Nov 21st* 1927

Rec. O.V.
QRK R5
note ft. DC
BRN R2
BRN NIL
ISS NIL

3SR

Remarks: having had for ASO co and own
space as late standing co but now
here of. Not sure ASO again of will
look out for it
Electric

73's from *Eric Jephcott*

block of ZZA-ZZZ) started to appear in DX lists in 1982. The Z27JAM card shown is a specially allocated call for the occasion of the 1988 JOTA. (See AR Jan and Feb 1991 for a description of the Boy Scout Movement through QSL cards). The QSL showing the "Zimbabwe Bird" emanates from Harare which was formerly Salisbury. This was one of many changes in place names since independence, the name Harare dating from April 1982.

After more than a decade during which anarchy was predicted in the transfer of power from the white minority to the black majority, Zimbabwe has experienced quite a peaceful transition period, especially since 1988. The former landholders remain owners of much of the country's wealth which includes vast mineral deposits. The country is also opening up to tourism. There are several national wildlife parks and reserves and, of course the famous Victoria Falls, the largest waterfall in the world, situated in the far west of the country on the Zambesi River. Several Australians have "discovered" the country in recent years, particularly since the introduction of direct flights to Harare from Australia through Qantas and Air Zimbabwe. ar

CHATSVI DISTRICT
HARARE NORTH
BOX MR 22 MARLBOROUGH
HARARE - ZIMBABWE

BOY SCOUTS ASSOCIATION
JAMBOREE ON THE AIR RADIO STATION

Z27JAM

NAME	DATE	QSL
VK1CFF	16/10/88	OSZ
NAME	MODE	RAY
21205	JSE	S3

TNX QSL PSE VY 73 BST DX



DE EVAN
HOME CALL Z218V

OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION BUT MUST BE LESS THAN 300 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS.

European Appreciation

I enclose a copy of a letter which arrived a few weeks ago by surface mail from the Hungarian Radio Amateur Society.

It is good to see our magazine is appreciated in other parts of the world.

STEPHEN PALL VK2PS

DX EDITOR OF AMATEUR RADIO

Dear Steve,

We have been very pleased when we read your excellent article on amateur radio in Hungary (May AR p24). We would like to express our sincere thanks for giving a realistic picture of our Society.

If you or any members of the WIA should visit Budapest, don't hesitate to pay a visit to our headquarters to establish personal contacts.

Bela Berzsenyi HA5EB

President of MRASZ

Cultured, but Codeless

I hope somebody tells VK3MEY (AR Sept 91 p56) that there are many people on the amateur bands without the code, eg "Limited Calls". Are we to be lumped in with his so-called "yahoos"?

If he bothered to read the regs he would know CW is only required to work 160 to 10 metres.

Perhaps he thinks all packet and RTTY

operators should do a typing test?

DARYL QUIRK VK3DXDQ

PO Box 78

NEWSTEAD 3462

Compulsion?

It is interesting to browse through past issues and compare those with the present. Doing that recently I found the following words of wisdom in a 1986 editorial:

"There are some countries where you cannot get an amateur licence until you have joined the amateur society. The society may even exam for, and award, the licence. Membership in those countries really is compulsory."

Also in the same editorial:

"Our Australian tradition... has prevailed for many years over some who might favour compulsory membership."

Now that the federal WIA has the responsibility of preparing examinations and providing results information I wonder — is compulsion far off, and will tradition again intervene?

The relevant traditions are: freedom of choice, people government through representatives or direct or both, and opposition to "representatives" who seek to develop their role as a power base.

LINDSAY LAWLESS VK3ANJ

Box 112 LAKES ENTRANCE 3909

Strange Facts?

Ref: Amateur Radio Sept 91, p47.

Further to Gil's definitions: an ohmmeter is one who eats ohms.

A Farad is a high Egyptian official, while a microfarad is an Egyptian public servant. (Pharaoh??)

A vacuum pump pumps nothing; a vacuum container contains nothing; and a vacuum tube conveys nothing from the container to the pump.

Finally, tools are pieces of soft iron stamped out by humorists.

GEORGE TROTTER VK2AVY

568 BUCKHORN ST

LAVINGTON 2641

Straightening Record

Reference the letter in Sept '91 (Memories of the War, p56), my father was delighted to see it in print, but pointed out that I had made a few errors in writing it without his knowledge.

Firstly, his jungle action was in Bougainville, not New Guinea. Secondly, the submarines involved were "Gato" and "Garfish", but not "Swordfish", although the latter was also active in the area.

We received a very nice letter from Rob VK5RG with reminiscences of the effort involved in getting one "portable" radio into the field. The AWA-made 3BZ transmitter/receiver/power supply, plus generator, batteries, fuel and other supplies (sometimes including food!) needed at least 14 soldiers to carry them all. Later, with the smaller and lighter 108 and 208 radios, smaller groups were possible.

One communication story was about a force of some 80 Japanese bombers flying over Bou-

gainville.

There was no time to encode a message, and Dad's colleague Ron ("Percy") Cream sent a brief plain-language report, which was heard by an SWL in Perth, passed on to the Army and thence to the USAAF in Guadalcanal (Solomon Is) in time for the American fighters to take off and tackle the bombers.

All in all, Dad was "tickled pink" to see his story in print (and will be again, I imagine! Ed). Thanks also to Horrie VK2AMZ for his "Krait" story in January.

MAURICE STONEHOUSE VK6NST
140 MEDINA AVE
MEDINA 6167

SILENT KEYS

**DUE TO INCREASING SPACE DEMANDS
OBITUARIES MUST BE NO LONGER
THAN 200 WORDS.**

We regret to announce the recent passing of:

Mr CC Carr	VK1DJ
Mr R Whitaker	VK3JS
Mr G Harvey	VK3CYA
Mr J McDonald	VK4CS
Mr B Underwood	VK5NMS
Mr L Arnold	VK7AM.

Les Arnold VK7AM

It is with deep regret that I have to record the passing of Les VK7AM on 10 September 1991, aged 78 years.

Les was among the early amateurs, having received his licence in 1934, and was active on all bands.

He was one of the founding members of the northern branch of the Tasmanian Division WIA, and was a meticulous constructor and operator.

During WWII Les was engaged in munitions work and, after we received our gear back, continued in his amateur interests.

Over more recent years Les was less active, having developed a great passion for his golf game and fishing interests, but amateur radio still played a part in his lifestyle.

A gentleman, Les will be missed by his many friends, and to his widow we extend our sincere sympathy.

RAY KILBY VK7RK

Robert Wilkins VK5AUR

Robert passed away on 5 August 1991 suddenly at his home at Callington, South Australia. Robert had a long battle with cancer over many years. The cancer went into remission and life looked good. But, in the end, it was his heart which gave out. Robert was 42 years old.

He was educated at Scotch College in Melbourne. Robert then completed training as a television technician with the ABC.

Robert was first licensed as VK3ZPX in 1965. He upgraded to VK3AUR. VK8RW and VK5AUR followed.

Always active, Robert had many interests and enjoyed life to the full. Many will remember VK3AUR on six metres in the late 1960s. Later, Robert was very interested in computers.

Robert worked in TV, radio, electronics and computers over many years. Lately Robert had been active on packet radio.

Robert will be sadly missed by the many friends and fellow amateurs who knew him.

To his mother Helen, sister Libby and her family, sons Troy and Justin, to his wife Mary and to Barbara we extend our sympathy.

GIL SONES VK3AUI

Rod Whitaker VK3JS

Rod passed away on 21 September 1991 just after his 52nd birthday, after a year-long battle with cancer. Although a low-profile person, he will be remembered by many. Rod was brought up in Sandringham where he went to school. After training in television at

RMIT he joined HSV7, where he worked for 22 years from 1968. Rod married Judy and moved to Dingley, where they raised two fine sons.

One of Rod's highlights was going to Montreal in Canada to cover the Olympic Games for the Seven Network. After rising to be Supervising Technician in Charge of Videotape, Rod felt it was time for a change, and moved to Haileybury College in the audio/visual field.

Rod was first licensed as VK3ZIW, and was very active in VHF activities for many years. He then obtained his full call and became an active DXer while still keeping an interest in VHF. His shack in Dingley was always a meeting place for those who knew him, and a number of amateurs had their introduction to radio through Rod. He was a member of the WIA and formerly the MDRC.

His other interests were cycling, windsurfing and computers. Rod will be sadly missed by his wife Judy, his sons Darren and Andrew, as well as his many friends.

KEN JEWELL VK3AKK

Morseword No 56

Solution Page 56

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Across:

- Keen
- Harvest
- Darkens
- Hearing is one
- Not right
- Terror
- Tack
- Over
- Errors
- Parts

Down:

- Fingered
- Attack
- Naked
- Feeder
- Ocean movements
- Quick glance
- Go without food
- Leases
- Jeer
- Secure

Audrey Ryan 1991

HAMADS

TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For LF/HF/VHF/UHF applications. Send DL size SASE for price list to RJ & S Imports, Box 431, Kalamia NSW 2533 (no enquiries at office, please). 14 Scarbro Ave. Kalamia. Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Hobart; Assoc TV Service, Hobart; Electronic Components, ACT; Truscott Electronics, Melbourne.

● **LOGMASTER:** Radio logkeeping software \$89. CODEMASTER Morse training/proficiency software \$39.99 endorsed by Officers of Signals Schools of Aust Army, both products include manuals for IBM/Compaq PC, XT, AT. Information Order. Milestone Technologies P/L, PO Box 699 Mt Waverley, Victoria, Australia 3149, phone (03) 807 6767. 8 Greenham Cres, Mt Waverley 3149.

● **RELIABLE PSU KITS 20A** ● 13.8V fixed or variable 8-15V, 25A & 30A transformers available. Features over voltage protection, fused over current protection, short circuit protection. Mains born spike protection. CWHITTY filter kits. Three switchable bandwidths 1800/10/800Hz at centre frequency 750kHz steep skirt a feature. Full details available from Moorabbin & District Radio Club, PO Box 68, East Bentleigh 3165.

● **WEATHER FAX programs** for IBM XT/ATs. RADFAX2 is a high-resolution short-wave weatherfax, Morse & RTTY receiving program. Needs CQ4, SSBHF and Radfax decoder. Also RF2BHC, RF2BGA & RF2BVA, same as RADFAX2, but suitable for Hercules, EGA and VGA cards respectively. \$35. SATFAX is a NOAA, Meteor and GMS weather satellite picture receiving program. Uses EGA or VGA modes. Needs EGA or VGA colour monitor card and Weatherfax PC card, & 137MHz receiver. \$45. All programs are on 5.25" or 3.5" disks (state which) and documentation. Add \$3 postage. ONLY from Mt Delahunty, 42 Villiers St, New Farm, Qld 4005. Ph: (07) 358 2785.

FOR SALE — ACT

● **YAESU FT730** 70cm FM transceiver. Ec. mic w/ultrash mouth & handhook. \$380. **YAESU FT102** HF transceiver. FM board fitted and with hand & desk mic. GC. \$880. Richard VK1RU (06) 258 1228.

FOR SALE — NSW

● **TELEQUIPMENT D43 CRO \$120.** Sanwa SO-108 RF signal generator 150kHz-300MHz. \$55. Gosselin Megger (mechanical) unused. \$40. New Cretal and miniature valves. SASE for list. VK2WS QTHR (067) 75 2158.

● **ICOM IC24-AT.** Nice little dual band handheld, but not as good as the one that replaced it. Ser No 13793. \$650 ono. Phil VK2TPH (042) 61 3666.

● **SWEET OSCILLATOR KAY 850.** Sweeps from 2MHz to 220MHz in 12 bands, \$220. Hewlett Packard sweep, model 8690A, from 1.6kHz to 4.2GHz, price. Vekt VK2CPK QTHR (02) 411 1227.

● **NEW AND USED low voltage high current power supply TFRs** and parts, heatinks and cases. Country freight no problem. Cheap prices. Fred VK2ZYU QTHR (02) 869 8989.

FOR SALE — VICTORIA

● **KENWOOD TS680,** \$650; 6m amp HL66V, \$260; 6m vert, \$60; log periodic 50-500MHz, \$150. David (03) 786 6323. AH (03) 662 3274 (BH).

● **KENWOOD TS440S** HF txw with mic, manual & DC lead, \$1675. Bert VK3BH QTHR (03) 857 9438.

● **ATN 8-element Log Periodic,** as new, \$700 ono; also scanner Seico SC7000, \$200. (051) 99 2811.

● **IC730 HF txw,** VGC, 10-80m w/mic & manual, \$N 12640, \$750. Kevin VK3CKL QTHR (03) 792 9503.

● **RACAL COMMUNICATION RECEIVER RA17L** with manual, VGC, \$600. (052) 48 1410 AH.

● **SONY MSX** micro floppy disk unit HBD50, compatible with FXT Pioneer computer, \$150 ono. VK3BAX QTHR (052) 7401.

● **YAESU FT101B,** VGC, Mic, manual and leads. Sell to licensed ham only. \$450 ono. VK3AXT QTHR (054) 39 5038.

● **PK87 TNC,** works well, \$150. Andy VK3DITO (053) 82 1439 or (053) 82 1759.

FOR SALE — QLD

● **433MHz S/STATE LINEAR** amp, 10W in 40W out, \$45. GAENA fast scan to slow scan converter, needs interconnections between panel & completed PCBs, \$140; Sig gen Heathkit RF11, \$25; tester for FETs, \$25; ATV txw 70cm, \$95; Inverter 12V DC to 270V DC, \$10. Carriage extra large items. Norm (077) 79 4641.

FOR SALE — SA

● **FRG7 receiver,** FM320 power supply; vertical ant AVT ant, 27m 25-channel txw SM 220 motor, SP850 speaker, SP40 mobile power supply, 12V2amps. "Others". VK3ASUS QTHR (08) 544 5011.

● **COMPLETE DRAKE STATION TR4C** txw, RV4C ext VFO L48 linear, AC4 & L4 power supplies, manuals, EC, 3el 20m & 5el 10m moraband Yagi. David VK3BWR (086) 45 4971 BH. Transmitting gear to licensed amateurs only.

FOR SALE — WA

● **LINEAR AMP FL2100-Z** SN 15070130. Serviced and tested, VGC, orig carton & operating manual. \$800. George VK6GF QTHR (09) 450 5222.

● **ICOM IC730** with desk mike, service manual, \$700 ono. (09) 535 7178.

FOR SALE — TAS

● **ICOM 1271A** all-mode 23cm tx/rx, ser no 1339, in PC, with built-in PSU PS-25, mike, manual & box, \$1500 ono. Will consider swap for HF rig, linear or test equip. Frank VK7LO QTHR (004) 33 3231.

WANTED — ACT

● **WANTED:** Engraved panels and/or metalwork for Electronics Australia, Deltahel or 240 communications receivers. Also Edystone 898 dual drive. J Weaver, PO Box 398, Woden ACT 2606.

WANTED — NSW

● **µA78H** Voltage Regulator. VK2FY QTHR (02) 449 4950.

● **CIRCUIT OR DIAGRAM** for handheld YAESU FT202. All costs paid. Bruno VK2BPO QTHR (02) 713 1831.

● **KENWOOD SP230,** Garnet VK2CGF QTHR (065) 51 0767.

WANTED — VIC

● **TRANSFORMER** 240V primary 100V 3-4 amp secondary. Urgent! Can anybody help? Denis VK3CUI (03) 874 6517.

WANTED — QLD

● **CAN ANYONE HELP?** Need manual & circuit for SS.105.S Shimizu Denshi. Will pay costs. Sandro VK4KSB, ex VK4NSB QTHR.

● **EX-PMG Telecom** Tress repair or Murray Multiplex gear. Stan VK4BSO QTHR (072) 67 6665.

● **MANUAL FOR ZENITH LAPTOP** computer model 181 or similar or borrow to copy. Will meet all costs. Bill VK4BIL QTHR (07) 263 2630.

● **CIRCUIT & DETAILS** AWA Skyphone type VC-10-D VHF, 10-channel. Reply to Freeport No 4, A G Loveday, Rubyvale Qld 4702. (079) 85 4168.

● **WANT TO RESTORE** army mine detector (Aust No 2 Mk 3 1953 with broken search cable and wires missing. Would like copy of manual and circuit. VK4EF, 97 Jubilee Tce, Brandon 4065. (07) 368 1803.

● **HERVEY BAY ARC** looking for info circuit, also model suitable to get Sagem TX20 onto HF RTTY. Box 528, Hervey Bay 4655.

WANTED — SA

● **COAX SWITCH.** Linear amplifier tubes (various), cheap HF txw, HF antenna, 6m gear for CW operation. Details to "Doc" of - VK5BWR, Box 444, Whyalla 5600.

● **HELP WITH CONV** of Expo Bushranger 27MHz CB to 20m. Is it possible? Any ideas appreciated. Alan VK5BWG QTHR.

WANTED — WA

● **VALVES** — 6BJ5, 6BF35M. Ceramic valve base for OB3/300. Write, phone or despatch to Ken Gilson, 5 Hilegine Crt, Gosnells 6110. (09) 398 7829.

STOLEN EQUIPMENT

Stolen from C S Fisher VK2CFC, 18 Langdale Ave, Revesby: FT-757GX HF transceiver S/N 4J 121 785; FC-707 Antenna tuner S/N 1L 170 086; PF-707 Power supply S/N 1L 150 596.

Recently a YAESU FT23R was stolen from the Box Hill branch of Dick Smith Electronics. The serial number is OD071663.

Stolen equipment from Alan VK2DQG, 80 Lorraine St, Peakhurst 2210: FT101E transceiver, S/N 8J361432; Kenwood MC50 Microphone; Kenwood LF30A lowpass filter; Daiwa CN620A SWR/power meter; home brew antenna tuning unit; home brew electronic Morse keyer; Vibropex Morse key; Dick Smith T2000 soldering station. Please contact Riverwood Police on (02) 584 1899.

MORSE COURSE

EVAN JARMAN VK3ANI

Morse code simulators are in the public domain, usually the result of an amateur writing some code so the home computer can be used for a little receiving practice.

Having seen a few, I was surprised to see a commercially written simulator appear. However, this is a well written simulator, with a number of features that others have found too difficult to incorporate.

For those who are unaware, a Morse code simulator usually uses the internal speaker of a computer to transmit Morse code and then displays the code sent on the screen for verification. The only thing it told is the speed at which to send. This allows the operator to improve his receiving skills.

"Morse Course" does this and more. It has been written to give a display that takes advantage of the screen available and is comparable with any other software available. The true beauty of Morse Course is that it allows the operator to program as many options as required.

The menu allows selection of the characters to be sent, the speed, even the tone of the signal. For those learning Morse, there is a complete set of lessons. The option that really pleased me was the simulator where you have to respond with particular codes to what is sent. Yes, Morse Course also listens to your fist, but more on this later.

An option that will please many contemplating the Morse examination is the simulator's ability to send any

text you nominate. The text is loaded with any text editor (eg Edlin XT Gold etc) and then called from the menu of Morse Course.

I loaded some of the old examination texts, set the tone and proved to my satisfaction that Morse Course could be used to simulate any examination requirement. It may be a thought for those involved in the examination development.

Morse Course could also be used to practise sending. Although the manual specifies using the shift key or mouse button, I made a small mouse extension cable with a key parallel with the mouse button. You need the mouse for start up, as the computer will look for it when the mouse-program executes. This is far better than the technique recommended in the

manual which was the only part I would not agree with.

Sending practice is possible with Morse Course with two options available. One gave a list of characters to send and then showed graphically how the quality of transmission was. This can be used to improve quality, for it is quite objective. A set of lessons for those wanting to learn Morse code is included with an itinerary so that what is learned is not rushed.

Morse Course comes as a disk and manual. The disk carries a user registration embedded in the code. It is easily the best Morse code simulator I've seen.

Our copy came from Goodhand Technologies and was an IBM-compatible format. See advert P 25. ar

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

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*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

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Not for publication:

☐ Miscellaneous

☐ For Sale

☐ Wanted

Name: Call Sign: Address:

Solution to Morseword No 56 Page 53

	1	2	3	4	5	6	7	8	9	10
1
2
3
4
5
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10

Solution for Morseword No 56
Across: 1 eager; 2 reap; 3 dims; 4
sense; 5 left; 6 fear; 7 nail; 8 past; 9
sins; 10 bits.
Down: 1 felt; 2 raid; 3 bare; 4 bib; 5
tides; 6 peep; 7 fast; 8 rents; 9 gibe; 10
safe.

HOW TO JOIN THE WIA

Fill out the following form and send
to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information
about the WIA.

Mr, Mrs, Miss, Ms:

Call Sign (if applicable):

Address:

State and Postcode:

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VK5	PO Box 10092 Gouger St Adelaide SA 5001
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Anderson VK8HA Box 619 Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026

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